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2023 VOLUME 12 ISSUE 3

Advanced Emergency Medicine

2023 Volume 12 Issue 3
ISSN：2315–456X

Advanced Emergency Medicine

Universe Scientific Publishing

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Volume 12 Issue 3·2023
ISSN:2315-456X

Advanced Emergency Medicine

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2023 | Volume 12 | Issue 3

Advanced Emergency Medicine

http://aem.usp-pl.com/index.php/aem

Contents

Original Articles

The Value of D-dimer in the Prognosis and Clinical Classification of Acute Aortic Dissection

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Abstract: Objective: To investigate the prognostic and clinical classification value of D-dimer in acute aortic dissection (AAD), thereby providing a foundation for early clinical attention and proactive intervention. Methods: The clinical data of 74 patients with acute aortic dissection were retrospectively analyzed. Based on the prognosis, they were categorized into two groups: death group and survival group. Univariate and multivariate logistic regression analyses were employed to investigate the risk factors associated with in-hospital mortality in patients with acute aortic dissection (AAD). Similarly, regression analysis was conducted to identify the risk factors for Stanford A acute aortic dissection according to the Stanford classification criteria. Additionally, the prognostic value of D-dimer for both AAD and Stanford A dissection was evaluated using ROC curve analysis. Results: Significant differences were observed in Stanford type A, creatinine, D-dimer, and N-terminal pro-brain natriuretic peptide (NT proBNP) levels between the death group and survival group ($P < 0.05$). Multivariate regression analysis revealed that D-Dimer (odds ratio [OR] = 1.26, 95% confidence interval [CI]: 1.09-1.46, $P = 0.002$) and creatinine (OR = 1.02, 95% CI: 1.00-1.03, $P = 0.022$) independently contributed to the risk of mortality in patients with acute aortic dissection (AAD). The area under the curve (AUC) for D-dimer in predicting in-hospital death was found to be 0.77 with an optimal cut-off point of 6.5 mg/l; yielding a sensitivity of 86% and specificity of 62%. Significant differences were also observed between Stanford A and Stanford B classifications among female patients regarding clinical classification as well as D-Dimer levels ($P <0.05$). Multivariate analysis demonstrated that D-Dimer (OR=1.18,95 % CI : 1.05-1.32, P=0.005) and female gender (OR=4. 07, 95% CI: 1.24-13.29, P=0.02) were associated with increased risk of Stanford A dissection.The AUC for D-dimer was calculated as 0.69 with a critical point at 10.73mg/L,sensitivity ranged from 55%,and specificity reached 81%. Conclusion: The elevated levels of D-dimer not only serve as a prognostic indicator for mortality in acute aortic dissection but also act as a predisposing factor for Stanford A dissection.

Keywords: D-Dimer; Acute Aortic Dissection; Prognosis; Clinical Classification

Introduction

Acute Aortic Dissection (AAD) typically exhibits a rapid onset and can directly result in sudden death. Relevant studies have demonstrated that the average incidence of this disease is 3 to 6 cases per 100,000 individuals, with higher rates observed among the elderly at up to 15 cases per 100,000 individuals. Furthermore, there has been a consistent year-on-year increase in its incidence [1-2]. The direct out-of-hospital mortality rate for AAD exceeds 20%, while even with timely treatment, in-hospital mortality can reach as high as 30%. Following diagnosis, the risk of death for AAD patients escalates by approximately 1%-2% per hour [3]. In recent years, an increasing number of laboratory indicators have been employed for prognostic evaluation of in-hospital outcomes related to AAD. D-dimer serves as a routine admission test indicator and is commonly utilized for diagnosing various diseases; it also holds certain diagnostic value for AAD patients. Several studies have indicated that elevated D-dimer levels are associated with poor prognosis among AAD patients [4]. Routine laboratory

tests are extensively used in clinical practice due to their intuitive data presentation and prompt results acquisition. Establishing correlations between laboratory findings and prognosis/classification plays a pivotal role in early warning systems, timely attention allocation, and proactive intervention during clinical practice. This study aims to analyze in-hospital data from AAD patients to identify risk factors linked to in-hospital mortality and susceptibility factors specific to Stanford type A dissection. Additionally, we aim to further elucidate the impact of D-dimer on the prognosis of AAD along with any disparities across clinical classifications.

1. Data and Methods

1.1 Study Population

A total of 74 patients diagnosed with acute aortic dissection were enrolled from December 2019 to December 2020 at the Emergency Department of the Second Hospital of Hebei Medical University. The cohort consisted of 53 males and 21 females, with a mean age at onset of (50.93±10.68) years. Among them, there were 21 cases in the deceased group and 53 cases in the survival group, including 38 cases classified as Stanford A type and 36 cases classified as Stanford B type.

1.2 Inclusion and exclusion criteria

Inclusion criteria: patients with acute aortic dissection were diagnosed by aortic CT angiography (CTA); All patients were acute onset, the onset time was less than 14 days. All of them had no previous history of AAD and were the first onset of AAD.

Exclusion criteria: acute cerebral infarction, pulmonary embolism, chronic obstructive pulmonary disease, deep venous thrombosis of lower extremities, pregnancy, infection, tumor, autoimmune system disease, basic liver and kidney insufficiency, coagulation dysfunction.

1.3 Methods

The age, gender, chest pain, onset time, past medical history, personal history, laboratory routine test indicators, clinical classification and prognosis in hospital were collected. D-dimer, N-terminal pro-brain natriuretic peptide (NT-proBNP) and high-sensitivity troponin I (hs-cTnI) were detected by Raylaike Bioscience TZ301 detector, and the detection principle was immunofluorescence method. Other laboratory indicators were uniformly detected by the laboratory department of our hospital.

1.4 Statistical analysis

Using SPSS21.0 statistical software, t test and non-parametric test were used to analyze the difference of measurement data between groups, and X^2 test and Fisher's exact probability test were used to analyze the difference of count data. logistic regression analysis was used to explore the relationship between D-dimer and the prognosis and clinical classification of acute aortic dissection. The receiver operating characteristic curve (ROC) was drawn and the area under the curve was calculated. $P<0.05$ was considered statistically significant.

2. Results

2.1 Regression analysis according to prognostic outcome

Univariate analysis of patients with acute aortic dissection between the death group and the survival group, the proportion of Stanford type A, creatinine, D-dimer and N-terminal pro-brain natriuretic peptide (NT-proBNP) in the death group were significantly higher than those in the survival group, with statistical differences. See Tables 1 and 2 for details.

Table 1 Univariate analysis of the death and survival groups of acute aortic dissection

General information	Total (n=74)	Death group (n=21)	Survival group (n=53)	t/X^2	*P*
Age y(M±SD)	50.93 + / - 10.68	50.29 + / - 12.44	51.19 + / - 10.01	0.33	0.75
Time of onset h[M	10.50 (5.00,	8.00 (3.50, 24.00)	24.00 (5.00,24.00)	1.09	0.27

(P25-P75)]	24.00))				
Chest pain n(%)	49 (66.2)	16 (76.2)	33 (62.3)	1.30	0.25
Hypertension n(%)	53 (71.6)	13 (61.9)	40 (75.5)	1.36	0.24
Smoking n(%)	27 (36.5)	6 (28.6)	21 (39.6)	0.79	0.37
Drinking n(%)	31 (41.9)	9 (42.9)	22 (41.5)	0.01	0.92
Stanford type A n(%)	38 (51.4)	16 (76.2)	22 (41.5)		
Stanford B type n(%)	36 (48.6)	5 (23.8)	31 (58.5)	7.24	0.007
Male n(%)	53(71.6)	17(81)	36(67.9)		
Female n(%)	21 (28.4)	4 (19)	17 (32.1)	1.26	0.26

Table 2 Comparison of laboratory indexes between the death group and the survival group of acute aortic dissection M (P25, P75)

Laboratory indexes	Death group (n=21)	Survival group (n=53)	Z	*P*
WBC(*10^9/L)	10.70 (8.10, 13.75)	11.40 (9.10, 13.30)	0.42	0.68
Hs-CRP(mg/L)	4.60 (1.45, 31.45)	7.90 (2.00, 20.27)	0.72	0.47
MYO(ng/mL)	81.00 (44.50, 350.50)	58.00 (38.00, 120.50)	1.31	0.19
CK(U/L)	100.00 (71.00, 246.50)	113.00 (68.50, 204.00)	1.00	0.92
CK-MB(U/L)	28.00 (18.50, 39.00)	25.00 (20.00, 33.50)	0.28	0.78
LDH(U/L)	268.00 (227.50, 346.00)	258.00 (206.00, 325.00)	0.88	0.38
HBDH(U/L)	198.00 (164.50, 246.50)	181.00 (152.00, 242.00)	1.37	0.17
ALT(U/L)	18.70 (13.60, 27.40)	18.10 (11.65, 32.75)	0.02	0.99
AST(U/L)	20.70 (15.45, 31.65)	20.10 (16.70, 29.25)	0.07	0.95
Creatinine (μmol/L)	102.00 (74.00, 165.50)	78.00 (66.00, 97.00)	2.29	0.02
TG(mmol/L)	1.51(0.88, 1.56)	1.51(1.09, 1.56)	0.97	0.33
D-dimer (mg/L)	12.00(6.89, 12.00)	3.30 (1.66, 11.65)	3.71	< 0.001
NT-proBNP(pg/mL)	524.3(250.9,910.3)	224.60(76.25,438.60)	2.60	0.009
Hs-cTnI(ng/ml)	0.05 (0.03, 0.05)	0.03 (0.03, 0.05)	1.41	0.16

Multivariate logistic regression analysis of in-hospital death outcome of acute aortic dissection showed that Stanford type A, D-dimer, creatinine and NT-proBNP were the risk factors for AAD death, which were included as independent variables, and the prognosis of death was used as the dependent variable for binary logistic regression. Binary logistic regression analysis showed that elevated D-dimer and creatinine were independent risk factors for in-hospital death in patients with AAD. The specific assignment is shown in Table 3.

Table 3 Risk factors for prognosis of AAD death in multivariate analysis

Indicators	OR value	95%CI	*P* value
Creatinine	1.02	1.00, 1.03	0.022
D-dimer	1.26	1.09, 1.46	0.002

ROC curve of D-dimer for predicting in-hospital death risk of acute aortic dissection and the best cut-off value The area under the curve of D-dimer for predicting AAD was 77%, the best cut-off value was 6.5, the sensitivity was 86%, and the specificity was 62%. The ROC curve is shown in Figure 1 for details, and the cut-off values are shown in Table 4.

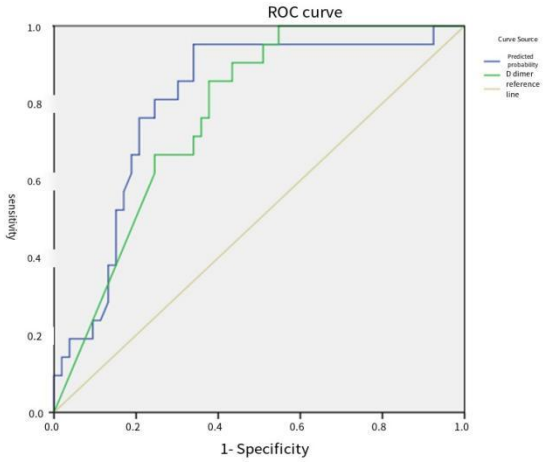

Figure 1 ROC curve of D-dimer for predicting in-hospital mortality risk of acute aortic dissection

Table 4 cut-off values of D-dimer for predicting in-hospital mortality risk in AAD

Indicators	AUC	95%CI	*P*	The Cut-off value	Sensitivity	Specificity
Prediction probability	0.81	0.70-0.91	< 0.01	0.22	0.95	0.66
D-dimer	0.77	0.67-0.88	< 0.01	6.5	0.86	0.62

2.2 Risk factors analysis of Stanford type A dissection

Comparison of clinical data between Stanford type A and Stanford type B acute aortic dissection, there were statistical differences in gender and D-dimer between the two groups. The proportion of female patients in Stanford type A was higher than that in Stanford type B. The value of D-dimer in Stanford A type was significantly higher than that in Stanford B type. See Table 5.

Table 5 Comparison of data between the Stanford type A group and the Stanford type B group of acute aortic dissection

Indicators	Stanford Type A	Stanford Type B	$t/X^2/Z$	*P*
Sex ratio (male/female)	23:15	5:1	4.73	0.03
Age (y)	50.47 + / - 10.67	51.42 + / - 10.82	0.38	0.71
Time of onset (h)	10.00 (4.75,24.00)	24.00 (5.25, 60.00)	1.14	0.26
Chest pain n(%)	26 (68.4)	23 (63.9)	0.17	0.68
Hypertension n (%)	27 (71.1%).	26 (72.2%).	0.01	0.91
Smoking n(%)	12 (31.6%).	15 (41.7%).	0.81	0.37
Drinking n(%)	14 (36.8%).	17 (47.2%).	0.82	0.37
White blood cells (*109/L)	11.50 (9.18, 14.00)	10.65 (7.78, 13.28)	1.44	0.15
Hs-CRP(mg/L)	5.50 (1.40, 19.66)	11.75 (2.13, 22.05)	1.44	0.15
MYO(ng/mL)	68.50 (35.75, 146.25)	56.50 (43.25, 111.75)	0.60	0.55
CK(U/L)	110.50 (73.75, 203.50)	109.50 (64.00, 247.75)	0.49	0.63
CK-MB(U/L)	27.50 (19.75, 40.50)	25.00 (19.25, 32.75)	0.73	0.47
LDH(U/L)	270.50 (226.25, 325.00)	247.50 (201.25, 321.75)	1.44	0.15
HBDH(U/L)	188.00 (159.75, 244.75)	180.00 (145.50, 254.44)	0.94	0.35
ALT(U/L)	17.60 (12.08, 32.13)	21.05 (12.38, 31.25)	0.42	0.68

AST(U/L)	20.60 (17.08, 31.53)	19.30 (16.18, 29.93)	0.83	0.41
Creatinine (μmol/L)	90.96 (69.00, 128.50)	78.50 (68.00, 96.25)	1.03	0.30
TG(mmol/L)	1.54(1.13, 1.56)	1.30 (0.93, 1.56)	0.76	0.45
D-dimer (mg/L)	11.76 (3.33, 12.00)	2.83 (1.60, 9.60)	2.92	0.004
NT-proBNP(pg/mL)	329.60(182.75, 784.18)	220.75 (58.93,648.90)	1.76	0.08
Hs-cTnI(ng/ml)	0.04 (0.03, 0.06)	0.03 (0.03, 0.05)	1.11	0.27

Logistic regression analysis of Stanford type A dissection included gender and D-dimer with significant differences in clinical classification into multivariate regression analysis, and the results showed that female and high D-dimer were risk factors for Stanford type A dissection. See Table 6.

Table 6 logistic regression analysis of Stanford type A acute aortic dissection

Indicators	OR value	95%CI	*P* value
D-dimer	1.18	1.05-1.32	0.005
Women	4.07	1.24-13.29	0.02

ROC curve and optimal cut-off value of D-dimer in predicting Stanford type A acute aortic dissection, the area under the curve of D-dimer in predicting Stanford type A acute aortic dissection was 69%, the optimal cut-off value was 10.73, the sensitivity was 55%, and the specificity was 81%. For details, please refer to Figure 2 and Table 7.

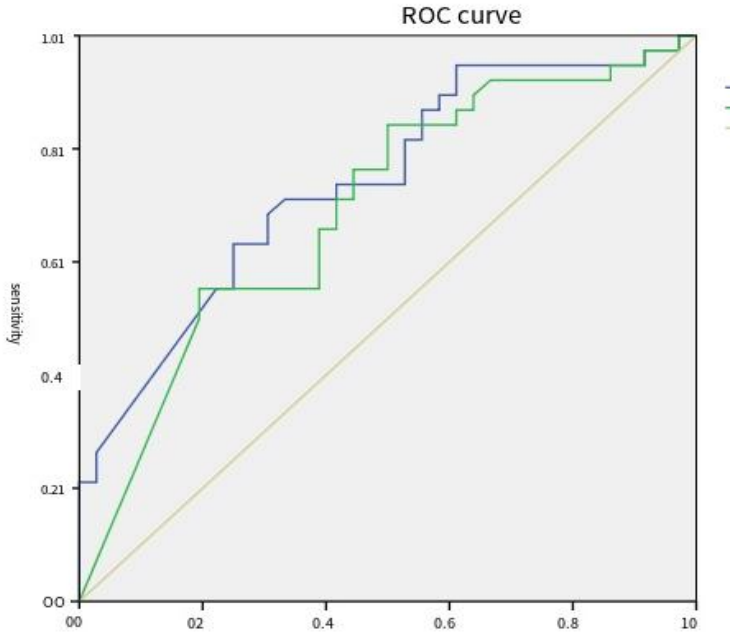

Figure 2 ROC curve of D-dimer for predicting Stanford type A acute aortic dissection

Table 7 Cut-off values of D-dimer for predicting Stanford type A AAD

Indicators	AUC	95%CI	*P*	The Cut-off value	Sensitivity	Specificity
Prediction probability	0.74	0.63-0.85	< 0.001	0.60	0.63	0.75
D-dimer	0.69	0.57-0.81	0.004	10.73	0.55	0.81

3. Discussion

Bedside D-dimer detection is short, fast and convenient, and has a high value in the diagnosis of a variety of clinical

diseases, especially in the emergency department. D-dimer is a product of fibrin degradation, which can be used to diagnose venous thromboembolism and other thrombotic diseases[5,6]. At the same time, in patients with acute cerebral infarction, D-dimer is directly[7] proportional to the severity of infarction. A number of previous studies have shown that D-dimer has the value of differential diagnosis of ADD, and a large number of literature in recent years has also summarized its value[8] in predicting the prognosis of patients with acute aortic dissection. This study found that D-dimer in the death group of AAD was significantly higher than that in the survival group, which is consistent[9,10] with previous results in this direction. We conclude that a D-dimer level of 6.5μg·ml^{-1} has a sensitivity of 86% for prognostic outcomes. Li Dandan et al. found that when the optimal critical point was 4.85 μg·mL^{-1}, the sensitivity could reach 85.7%[11]. The cut-off value of D-dimer for predicting in-hospital death of acute aortic dissection was different from each experiment. It was considered to be related to the extent of aortic tear and the state of false lumen formed with the progress of the disease after aortic tear, and D-dimer increased with the increase[12,13] of tear length. However, in the clinical treatment process, there are some acute aortic dissection with negative D-dimer, which should be paid special attention[13,14] to.

The value of D-dimer in Stanford A type was significantly higher than that in Stanford B type. The results of this study showed that D-dimer could be used as an independent factor to predict Stanford type A dissection. When the cut-off value was 10.73, the specificity was 81%, but the sensitivity was low. The D-dimer level of Debakey type II dissection is lower than that of Debakey type I dissection. Although both type I and type II dissection are Stanford type A, the false lumen formed by Debakey type I tear is longer[15]. It can be seen that the difference in classification is significantly related to the range of vessels involved, which is also consistent with the effect of the degree of tear on D-dimer. Stanford type A dissection involves a wider range of vessels than Stanford type B dissection, which leads to the formation[16,17] of D-dimer. In addition, the dynamic monitoring of D-dimer level is especially necessary for the diagnosed Stanford type B dissection. When the value is abnormally higher than before, it should be alert to the expansion of the dissection area or the occurrence[18] of complications such as pulmonary embolism and lower extremity venous thrombosis.

In conclusion, D-dimer level is an independent factor affecting the prognosis of patients with AAD, and has a certain predictive value for the prognosis and classification of AAD patients. The D-dimer level should be dynamically monitored in emergency clinical work. When it is abnormally high, CTA examination should be performed as soon as possible to further confirm the diagnosis, and active intervention should be taken to improve the survival rate of patients.

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The Value of CT Enhancement Degree in Prognosis of Pancreatic Cancer

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Abstract: Objective: To explore the prognostic value of CT enhancement degree of pancreatic cancer in pancreatic cancer. Methods: From January 2019 to January 2022, 50 patients with pancreatic cancer who came to our hospital for pathological confirmation were selected. Prior to surgery, use multiphase CT of the pancreas to complete enhanced scans. After surgery, the patient's survival period, clinical treatment effectiveness, and imaging data are used as research variables. In the scanning diagnosis, it is necessary to collect the patient's age, gender, tumor location and size, differentiation process, CT value, etc. Create a mathematical model based on the collected data and complete the experimental research work. Results: Univariate analysis showed that the prognosis of pancreatic cancer patients with higher enhancement degree in each stage ($P<0.05$ in each stage) was better. Multivariate analysis showed that tumor differentiation ($P=0.0118$), TNM staging ($P=0.004$), and portal vein enhancement ($P<0.001$) can be independent predictors of patient prognosis. Conclusion: The lower the CT enhancement degree of pancreatic cancer, the worse the prognosis.

Keywords: Pancreatic Cancer; Tomography; X-Ray Computer; Prognosis

Introduction

Pancreatic cancer is a high incidence tumor and a malignant tumor with poor prognosis. The survival probability of patients with pancreatic cancer in the next five years is only 9%, which is the lowest among all cancers. Therefore, before treatment, we should fully understand the various factors that affect the prognosis of pancreatic cancer. Through accurate collection of various data, we can ensure the survival time of the prognosis and determine effective treatment plans. The blood supply of pancreatic cancer can be displayed by enhanced CT. Usually, pancreatic cancer has no blood supply, but there is a small part of blood supply. At present, multiple foreign scholars have found through research that analyzing the blood supply of tumors can predict the invasiveness and prognosis of tumors. This article analyzes the clinical and imaging characteristics of pancreatic cancer in order to explore the relationship between CT enhancement degree and prognosis, so as to improve the preoperative diagnosis and prognosis of pancreatic cancer.

1. Materials and Methods

1.1 General Information

50 patients with pancreatic cancer who came to our hospital for pathological confirmation from January 2019 to January 2022 were selected. Among them, there were 28 males (55.7%) and 22 females (44.3%), aged 48-86 years, with an average age of (68.4 ± 8.2) years. Inclusion criteria: (1) Patients with pancreatic cancer confirmed by pathology; (2) Abdominal CT enhanced examination before surgery, and all patients underwent surgical treatment; (3) Failure to undergo biopsy or treatment before CT enhancement examination, such as fine-needle aspiration biopsy, surgical treatment, radiotherapy and chemotherapy, etc; (4) The patient eventually died of pancreatic cancer or its complications. All patients underwent surgical treatment, and postoperative specimens were sent to the pathology department for HE staining and

immunohistochemical examination. The pathological results were used as the final diagnosis.

1.2 Inspection method

Using the AquilionViSIONSi emensSomatom Definition Flash CT scanner of the Canon (Toshiba) 320CT, all cases underwent three phases of enhanced CT scanning (pancreatic parenchymal phase, portal vein phase, and delayed phase) after plain CT scanning (images were collected at 45s, 65s, and 120s after injection), with a scanning range ranging from the level of the top tangent of the diaphragm to the level of the lower edge of both kidneys. Iodopanol, an enhancer, has a concentration of 370mgI/ml, a dosage of 100ml, and an intravenous injection rate of 3ml/s.

1.3 Image Analysis

The CT scan images were retrospectively reviewed and analyzed by two professional abdominal imaging physicians. When the opinions of the two physicians differed, consistent data was obtained through discussion. Selection of Region of Interest (ROI) in CT: ROI selects the solid area of the lesion, and the size of the ROI should not exceed the boundary of the lesion, avoiding cystic necrosis and calcification areas. The observation content is as follows: (1) The location and size of the lesion (pancreatic head, pancreatic neck, pancreatic body, and pancreatic tail) (select the maximum diameter); (2) Enhancement degree: One imaging physician will measure the CT value of ROI at each stage of the lesion, and take the average of three measurements; (3) Other imaging changes: presence or absence of lymph nodes (lymph node metastasis is defined as lymph node short diameter>1.0cm), and metastasis to other organs.

1.4 Statistical Analysis

The survival period of a patient refers to the period from the first imaging examination to the most recent follow-up or patient death. Use SPSS24.0 statistical software for data analysis. Survival variables include age, gender, tumor indicator (CA199) serological level, tumor location, tumor size, degree of differentiation, TNM staging, and CT values at each stage of enhanced CT. The survival curve was plotted using Kaplan Meier method, univariate analysis using log rank test, and multivariate analysis using COX regression model. $P<0.05$ indicates a statistically significant difference.

2. Results

2.1 Patient characteristics

The main characteristics of the patient. The TNM staging is based on the AJCC 8th edition staging standards. The median survival time of the patient is 18 months (1-61 months).

2.2 Univariate and multivariate analysis of prognosis of pancreatic cancer

Single factor and multi factor analysis results for each variable. Univariate analysis showed that age ($P=0.386$), tumor site ($P=0.311$), and CA199 serum level ($P=0.445$) were not related to the prognosis of pancreatic cancer patients. The survival time of female patients was significantly longer than that of male patients (median survival time of 40 months vs. 20 months, $P=0.024$). The survival time of patients with tumors<3.0cm was significantly longer than that of patients with tumors ≥ 3.0cm (median survival time of 34 months vs.15 months, $P=0.012$). The survival time of patients with medium to high degree of tumor differentiation was significantly longer than that of patients with low to low degree of differentiation (median survival time of 31 months vs 13 months, $P=0.015$). The survival time of TNM stage I-II patients was significantly longer than that of TNM stage III-IV patients (median survival time 29 months vs. 6 months, $P=0.001$). Patients were divided into two groups based on the median CT values of each stage after enhancement, and there was a significant difference in survival time between the two groups ($P<0.05$). The survival time of patients with high enhancement was significantly longer than those with low enhancement. In this paper, we found that one case of pancreatic cancer had higher enhancement than the surrounding normal pancreatic parenchyma, and its survival time has exceeded 78 months. The results of multivariate analysis showed that the degree of tumor differentiation ($P=0.017$), TNM stage ($P=0.004$), and portal phase enhancement ($P<0.001$) can be independent predictors of patient prognosis. Patients with low to medium low differentiation,

TNM stage III-IV, and lower portal phase enhancement have poorer prognosis.

3. Discussion

3.1 Enhancement degree, tumor differentiation degree and prognosis of pancreatic cancer

This article focuses on the enhancement degree of pancreatic cancer at various stages. Through the analysis of collected data, the relevant effects of patient prognosis can be understood, among which the degree of enhancement in the portal vein phase can serve as an independent predictor of patient prognosis ($P<0.05$). Previous studies have shown that the richer the blood supply and the higher the degree of enhancement of pancreatic cancer, the better its prognosis. For pancreatic cancer with high CT enhancement, the enhancement degree can be similar to that of normal pancreatic tissue. It is called equal enhancement pancreatic cancer, accounting for 5.4% -14% of pancreatic cancer. It has unique clinical and pathological characteristics, and has a better prognosis after surgical treatment. The mechanism behind it is not yet clear.

Some studies have shown that tumor size, tumor differentiation, cell density, matrix fibrosis, coexisting normal pancreatic tissue, and degree of necrosis may all affect the degree of tumor enhancement. The study found that for small pancreatic cancer below 2cm, its enhancement degree is higher, and it is more likely to have equal enhancement. The smaller the tumor, the better its prognosis. However, small equal enhancement pancreatic cancer is easy to be missed in CT enhancement examination. Therefore, for patients with increased clinical lesions, the pancreatic head is slightly enlarged, the uncinate process is blunt or loses its normal shape in CT scanning. Whether there is expansion of pancreatic bile duct or obvious mass, the possibility of small pancreatic cancer should be highly suspected. CT energy spectrum imaging, enhanced MRI or PET/CT are more sensitive to this type of pancreatic cancer. The degree of tumor differentiation is also an important factor affecting prognosis, and usually the higher the differentiation, the better the prognosis. For well differentiated pancreatic cancer, its characteristic histopathological manifestation is that normal pancreatic acini remain between tumor glands, so well differentiated pancreatic cancer also has a high degree of enhancement. This is also consistent with the results of this article. Some scholars also believe that matrix fibrosis plays an important role in the treatment and prognosis of patients. The more obvious matrix fibrosis, the lower the degree of tumor enhancement, the stronger the invasiveness of the tumor, the more obvious the resistance of the tumor to radiotherapy and chemotherapy, and the poorer the prognosis of patients.

3.2 TNM staging and prognosis of pancreatic cancer

This paper found that TNM staging of pancreatic cancer is also closely related to the prognosis of patients, which is currently recognized as a factor affecting the prognosis of pancreatic cancer. Preoperative TNM staging of pancreatic cancer patients according to relevant standards found that TNM staging can not only guide the choice of treatment plans, but also serve as an independent predictor of the prognosis of pancreatic cancer. To sum up, the lower the degree of CT enhancement of pancreatic cancer, the worse its prognosis. And the degree of tumor differentiation, TNM staging, and portal vein phase enhancement can be independent predictors of patient prognosis.

4. Summary

The study found that the lower the CT enhancement degree of pancreatic cancer, the worse its prognosis. And the degree of tumor differentiation, TNM staging, and portal vein phase enhancement can be independent predictors of patient prognosis.

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Therapeutic Effect of Azithromycin on Clinical Gynecological Mycoplasma Infection

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Abstract: Objective: To explore the therapeutic effect of Azithromycin on gynecological mycoplasma infection. Method: Forty patients with gynecological mycoplasma infection who underwent examination and treatment in our hospital from June 2021 to June 2022 were selected as the study subjects. These 40 patients were divided into a control group and an experimental group, with 20 patients in each group. Among them, the experimental group was treated with Azithromycin, and the patients in the control group were treated with cefoxitin sodium. The effects, satisfaction and adverse reactions of the two groups were compared. Result: Through experimental comparison, it can be seen that the total effective rate of treatment in the experimental group is better than that in the control group, and the difference between the two is statistically significant ($P<0.05$); After receiving treatment, the IL-10 and TNF levels in two experimental groups of patients- α, CRP and other levels all decreased, and in the observation group, patients' IL-10 and TNF- α. The CRP level will be lower than the control group, and the difference between the two is statistically significant ($P<0.05$). After the experiment, the satisfaction of patients in the observation group will be higher than that in the control group, and the difference between the two is statistically significant ($P<0.05$). Conclusion: The treatment effect of Azithromycin for clinical gynaecological mycoplasma infection will be better. With this treatment method, the clinical symptoms of patients can be effectively improved. At the same time, the treatment compliance and satisfaction of patients can be further improved, and the probability of various adverse reactions can be reduced. It can be popularized and applied to clinical practice.

Keywords: Clinical; Gynecology; Mycoplasma Infection; Azithromycin; Treatment Effect

1. Experimental Data and Methods

1.1 Experimental data

Collect and organize information on 40 patients with gynecological mycoplasma infection who underwent examination and treatment in our hospital from June 2021 to June 2022, and conduct experiments. Extract relevant data from 40 patients and divide them into an experimental group and a control group, with 20 patients in each group. Among them, in the experimental group, the minimum age of patients is 20 years old, the maximum age is 52 years old, and the overall average age is 31 years old; The shortest duration of the disease is 2 months, the longest is 17 months, and the overall average duration is 6 months; There were 3 patients with Endometritis, 7 patients with salpingitis, and 10 patients with pelvic Peritonitis. In the control group, the minimum age of patients was 21 years old, the maximum age was 50 years old, and the overall average age was 30 years old; The shortest duration of the disease is 3 months, the longest is 15 months, and the overall average duration is 7 months; There were 5 patients with Endometritis, 6 patients with salpingitis, and 9 patients with pelvic Peritonitis. There was no statistically significant difference in the basic data of patients between the two groups ($P>0.05$).

1.2 Experimental Methods

The control group was treated with conventional injection of cefoxitin sodium. 2 grams of cefoxitin sodium were added to 100 milliliters of 0.9 sodium chloride solution through intravenous drip twice a day, with an interval of 12 hours between each infusion. The patients in the observation group were treated by injecting Azithromycin. 500 mg Azithromycin was mixed with 250 ml 0.9% sodium chloride solution, and intravenous drip was given once a day. Two experimental groups of patients were treated continuously for seven days, and nursing staff should always remind patients to prohibit sexual activity during the treatment process, maintain a scientific diet, pay attention to rest and hygiene.

1.3 Criteria for determining treatment effectiveness

Recovery: The laboratory mycoplasma culture result was negative, and the patient's various clinical symptoms completely disappeared.

Explicit: The laboratory mycoplasma culture result is negative, and the patient's clinical symptoms have improved, but have not completely disappeared.

Effective: The laboratory mycoplasma culture result is positive, and the patient's clinical symptoms have improved to a corresponding extent.

Invalid: The laboratory mycoplasma culture result is negative, and the patient's clinical symptoms have not significantly improved, and even the condition may worsen.

The total effective rate of treatment is determined by the proportion of patients who have recovered, achieved significant results, and become effective.

A detailed survey and analysis of treatment satisfaction was conducted using a self-made satisfaction questionnaire, with a maximum score of 100. A score below 60 indicates dissatisfaction, a score of 60-79 indicates satisfaction, and a score of 80-100 indicates very satisfaction. The proportion of highly satisfied patients to the total number of patients is the treatment satisfaction rate.

2. Results

2.1 Comparison of total effective rates between two groups of clinical treatments

The total effective rate of treatment for patients in the experimental group will be better than that in the control group, with a statistically significant difference ($P<0.05$). Table 1 shows the comparison of the total effective rate of clinical treatment between the two groups.

Table 1 Comparison of total effective rates of clinical treatment between two groups

group	Number of cases	heal	Apparent effect	effective	invalid
experimental group	20	9（45%）	6（30%）	4（20%）	1（5%）
control group	20	4（20%）	8（40%）	5（25%）	3（15%）
			1.962	1.487	2.003
P			＜0.05	＜0.05	＜0.05

2.2 Comparison of treatment satisfaction rates between two groups of patients

The satisfaction of patients in the observation group will be higher than that in the control group, and the difference between the two groups is statistically significant ($P<0.05$). Table 2 shows the comparison of treatment satisfaction rates

between the two groups of patients.

Table 2 Comparison of treatment satisfaction rates between two groups of patients

group	Number of cases	Very satisfied	satisfied	Dissatisfied
experimental group	20	17（85%）	2（10%）	1（5%）
control group	20	15（75%）	3（15%）	2（10%）
		1.002	1.352	1.458
		＜0.05	＜0.05	＜0.05

3. Conclusion

Mycoplasma infection is a very common disease in gynecological clinic, especially in women of childbearing age. If patients do not control their condition in time, then it is extremely easy to form serious gynecological diseases such as salpingitis and salpingo Ovarian cyst. Under the influence of mycoplasma infection factors, it can cause diseases such as local pelvic adhesions and fluid accumulation, and even cause serious symptoms such as infertility and ectopic pregnancy in some women, directly endangering their own safety. If a patient discovers that they have already contracted a Mycoplasma infection disease, effective measures must be taken immediately for treatment. In practical clinical practice, antibiotics can be used for the treatment of Mycoplasma infection disease. There are many types of antibiotic drugs, and more effective and targeted drugs should be selected for treatment. Azithromycin is a Macrolide antibiotic. Its application can further regulate the inflammatory reaction and immune function of patients, reduce the degree of cell damage symptoms caused by inflammatory reaction, and thus alleviate the inflammation of patients. Azithromycin can combine with the 50 second Ribosome subunit of sensitive microorganisms to interfere with the protein synthesis process, so as to achieve the goal of sterilization and antibacterial treatment. Azithromycin has a wide Antimicrobial spectrum, which contains more common pathogenic microorganisms, atypical pathogens, and can kill 98% of anaerobes and mycoplasmas. It can be learned that Azithromycin has a strong application effect in clinical gynecology. Its antibacterial performance is remarkable, and it can kill some common pathogens, microorganisms and atypical pathogens. It has obvious pharmacokinetic advantages, and can be used in tissues and body fluids. Its bioavailability can reach 54%, and its half-life is 68 hours. Its drug can act on human blood, Can maintain effective concentration for a long period of time. Moreover, during the use period, the local drug concentration of these drugs will significantly exceed the advantages of traditional multi drug combination therapy in terms of adverse reactions, dosage, and duration compared to other drugs, and the probability of adverse reactions among patients will also be relatively low. This treatment method can maximize patients' compliance with treatment, reduce treatment costs, and reduce economic pressure on patients.

Conclusion

To sum up, with the increasing number of female employees in China at this stage, women in the workplace will sit in the office for a long time with low resistance. Under the influence of insufficient exercise and other factors, the number of patients with cervical mycoplasma infection continues to increase, which is extremely easy to cause various gynecological diseases such as salpingitis and Cervicitis, thus affecting women's normal living conditions. In clinical practice, the use of Azithromycin can significantly improve the symptoms of patients. It is a highly effective and safe treatment drug, which can minimize the incidence of adverse reactions. It is worth applying its treatment to clinical practice and promoting.

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A Comparative Analysis of the Diagnostic Value of Shoulder MRI Plain Scan and MR Shoulder Arthrography for Rotator Cuff Injury

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Abstract: Objective: To analyze the diagnostic value of MRI plain scan and MR shoulder arthrography on rotator cuff injury. Methods: Sixty patients with suspected rotator cuff injury admitted to Yunnan South Central Hospital in Yunnan Province from October 2022 to March 2023 were selected, and all patients were scanned with MR conventional serial scan and MR arthrography, and the arthroscopic findings were used as the gold standard to compare the diagnostic results of the two methods on rotator cuff injury, the diagnostic value, the diagnostic value of different tear types, and the diagnostic value in oblique sagittal position for different parts of the display rate. Results: Arthroscopic findings were positive in 45 cases and negative in 15 cases; MR arthrography scans were positive in 42 cases and negative in 18 cases; MR conventional serial scans were positive in 39 cases and negative in 21 cases ; MR arthrography sensitivity was 88.89%, specificity 86.67%, accuracy 70.00%, positive predictive value 95.24% and 72.22% negative predictive value, while MR conventional serial scan was 84.44%, 93.33% specificity, 65.00% accuracy, 97.44% positive predictive value and 66.67% negative predictive value, with no statistically significant difference between the two methods (all $P > 0.05$); arthroscopy diagnosed 5 outer layer tears, 32 inner layer tears and 8 tendon MR arthrography diagnosed 6 outer layer tears, 33 inner layer tears and 6 intra-tendon tears, with an accuracy rate of 88.89% (40/45); MR conventional serial scan diagnosed 6 outer layer tears, 33 inner layer tears and 6 intra-tendon tears, with an accuracy rate of 84.44% (38/45). The difference in accuracy between the two groups was not statistically significant ($\chi^2 = 0.857$, $P = 0.355$); in the oblique sagittal position, MR arthrography showed a higher rate of biceps longissimus tendon, rostro-humeral ligament and superior glenohumeral ligament than did MR conventional serial scans ($P < 0.05$). Conclusion: Both MRI plain scan and MR shoulder arthrography have good diagnostic value for rotator cuff injuries, but MR shoulder arthrography is more effective in diagnosing medial tears in patients with rotator cuff injuries and can show more areas in the oblique sagittal position, which is more worthy of clinical use.

Keywords: Shoulder Joint; MRI Plain Scan; MR Shoulder Arthrography; Rotator Cuff Injury; Diagnostic Value

1. Introduction

Rotator cuff injury is one of the more common shoulder pathologies, accounting for 17-41% of all shoulder disorders and up to 50% of those over 80 years of age.[1] Causes include tendon changes, acute trauma and instability of the shoulder joint[2]. It is a major contributor to shoulder pain and dysfunction, but it occurs in patients with no typical symptoms and is easily missed or misdiagnosed.[3] Arthroscopy is the gold standard for the diagnosis of rotator cuff injuries, but although this technique is widely used, it is expensive, demanding and traumatic for the examiner, so its use is limited.[4] Magnetic resonance imaging (MRI) is a non-invasive test with excellent soft tissue resolution, multi-sequence and multi-directional imaging, and is therefore widely used in the diagnosis of rotator cuff injuries.[5]. However, conventional MRI still has its limitations in the diagnosis of rotator cuff injuries, as there are many suspicious points that cannot be accurately diagnosed.[6].

In recent years, MR arthrography has been increasingly used in the diagnosis of rotator cuff injuries, but direct imaging is more diagnostic, but can be more difficult for patients to accept. Indirect imaging involves the intravenous injection of contrast into the patient's joint cavity. The contrast agent penetrates and diffuses into the joint cavity, distending the joint capsule in order to facilitate the visualisation of the anatomical structures within the joint, with better results[7]. The study therefore compared the diagnostic value of MRI scan and MR shoulder arthrography for rotator cuff injuries to further improve the understanding and diagnosis of the rotator cuff in patients, as reported below.

1.1 Materials and methods

Sixty patients with suspected rotator cuff injury admitted to Yunnan South Central Hospital in Yunnan Province from October 2022 to March 2023 were selected. Among them, 35 were male and 25 were female; their ages ranged from 15 to 80 years, with a mean age of (55.39±3.45) years; the duration of the disease ranged from 3d to 3 years, with a mean duration of (0.86±0.40) years; inclusion criteria: ① patients and their families were informed and had signed the consent form; ② all presented with symptoms such as limitation of shoulder joint movement, shoulder pain and dysfunction; ③ no patients with hearing, intellectual or expression impairment; ④All patients agreed to undergo MR conventional serial scanning, MR arthrography and arthroscopy. Exclusion criteria: ① those with combined tumours; ② those with combined respiratory failure or severe organ dysfunction; ③ those with a history of shoulder surgery; ④ those who did not complete the experiment for various reasons.

1.2 Methodology

1.2.1 Conventional MR sequence scan examination

A magnetic resonance scanner (Instrument model: GE 3.0T MRI) was used to perform a routine MR examination on all patients, which was equipped with an 8-channel shoulder phasic coil. The patient was placed in a supine position with the shoulder joint close to the midline of the scanning bed, and the hands were placed on either side of the body to ensure that the patient's shoulder was relaxed on both sides. The centre of the coil is aligned with the humeral head and the centre of the scan, and the patient is scanned in transverse axial, oblique coronal and oblique sagittal fat suppression weighted sequences, starting with the shoulder joint under the field of view, followed by the humeral head, the glenoid and finally the lateral clavicle and the acromion. The scanning field of view is 18cm x 18cm with a matrix of 320 x 256. After the images are acquired, the final imaging diagnosis is made by two diagnostically experienced orthopaedic muscle diagnosticians.

1.2.2 MRI arthrography

MRI arthrography involves the injection of the contrast agent gadopentetate (conventional dosage 0.1 mmol/kg) into the patient's joint capsule under X-ray fluoroscopy, followed by movement of the affected shoulder joint. The MR T1WI sequence was performed in the transverse axial, oblique coronal and oblique sagittal fat suppression planes, with the same field of view, layer spacing and thickness as the conventional MRI scan.

1.2.3 Shoulder arthroscopy

Arthroscopy was performed on all patients using a shoulder arthroscope (instrument model: SY- SHREK-HD801). The arthroscope was inserted after puncturing the patient's shoulder joint to examine the rotator cuff and glenoid labrum to see if there was any rotator cuff or glenoid labrum injury.

1.3 Observation indicators and assessment criteria

(1) To analyse the results of MR conventional serial scans and MR arthrography for the diagnosis of rotator cuff injury, using shoulder arthroscopy findings as the gold standard. Criteria for the diagnosis of rotator cuff injury: A double-blind method was used to complete a D review of the patient's MR images, and when disagreement arose, it was referred to a superior physician for judgement. Conventional MRI: T2WI and PDWI sequences bleed abnormally high signal and

morphological changes occur as the main presentation; MR arthrography is a high signal contrast into the joint tendon rupture.

(2) The diagnostic value of different MR conventional sequence scans and MR arthrography for rotator cuff injuries, with indicators including sensitivity, specificity and positive and negative predictive values.

(3) MR conventional serial scans and MR arthrography were recorded and compared to diagnose the type of tear in patients with rotator cuff injuries, which included inner, outer and intra-tendon tears. The diagnosis of a tear: a high signal causes varying degrees of damage to the surface of the supraspinatus tendon, without involvement of the whole layer, for a localised rotator cuff tear; for a high signal, when the whole layer of the supraspinatus tendon is involved to varying degrees and contracture of the supraspinatus occurs, a total tear is diagnosed.

(4) Comparison of MR conventional serial scans with MR arthrography in the oblique sagittal view of the patient's long head of biceps tendon, rostro-humeral ligament and superior glenohumeral ligament.

1.4 Statistical methods

SPSS 22.0 was applied to process the data of this experiment, and the measurement data were expressed as mean ± standard deviation ($\bar{x}$ ±The t-test was used for the measurement data, and the χ^2 test was used for the count data.

2. Results

2.1 Diagnostic results of MR conventional serial scans and MR arthrography

Arthroscopy results showed 45 positive and 15 negative cases; MR arthrography scans detected a total of 42 positive and 18 negative cases; and MR conventional serial scans detected a total of 39 positive and 21 negative cases. See Table 1.

Table 1 Comparison of the diagnostic results of MR conventional serial scans and MR arthrography [$\bar{x}$ ±s, cases (%)]

Inspection methods		Shoulder arthroscopy diagnosis		
		Positive	Negative	Total
MR arthrography	Positive	40	2	42
	Negative	5	13	18
MR routine sequence scan	Positive	38	1	39
	Negative	7	14	21
Total		45	15	60

2.2 Comparison of the diagnostic value of MR conventional serial scans and MR arthrography for rotator cuff injuries

MR arthrography had a sensitivity of 88.89%, specificity of 86.67% , accuracy of 70.00%, positive predictive value of 95.24% and negative predictive value of 72.22%, and MR conventional sequence scan was 84.44%, specificity of 93.33%, accuracy of 65.00%, positive predictive value of 97.44% and negative predictive value of 66.67%. The differences between the two methods were not statistically significant (all P > 0.05) (Table 2).

Table 2 Comparison of the diagnostic value of MR conventional serial scans and MR arthrography [cases (%)]

Group	Sensitivity (%)	Specificity (%)	Accuracy (%)	Positive predictive value (%)	Negative predictive value (%)
MR arthrography	88.89 (40/45)	86.67 (13/15)	70.00 (42/60)	95.24 (40/42)	72.22 (13/18)
MR routine sequence	84.44 (38/45)	93.33 (14/15)	65.00	97.44 (38/39)	66.67

scan			(39/60)		(14/21)
χ^2	0.857	2.464	0.342	0.686	0.726
P	0.355	0.116	0.559	0.407	0.394

2.3 Comparison of the two groups for the diagnosis of the type of tear

Arthroscopy diagnosed 5 outer layer tears, 32 inner layer tears and 8 intra-tendon tears, a total of 45 cases; MR arthrography diagnosed 6 outer layer tears, 33 inner layer tears and 6 intra-tendon tears, with an accuracy rate of 88.89% (40/45); MR conventional serial scans diagnosed 6 outer layer tears, 33 inner layer tears and 6 intra-tendon tears, with an accuracy rate of 84.44% (38/45). 38/45). The difference in accuracy between the two groups was not statistically significant (χ^2 =0.857, P=0.355). See Table 3.

Table 3 Diagnosis of tear type by MR conventional serial scan versus MR arthrography (cases, n)

Inspection methods	Type of tear	Arthroscopic diagnosis		
		Outer layer	Inner layer	Intertendinous
MR arthrography	Outer layer	4	2	0
	Inner layer	1	30	2
	Intertendinous	0	0	6
	Total	5	32	8
MR routine sequence scan	Outer layer	4	2	0
	Inner layer	1	29	3
	Intertendinous	0	1	5
	Total	5	32	8

2.4 Display rates of different parts

In the oblique sagittal position, MR arthrography showed a higher rate of the long head of the biceps tendon, rostro-humeral ligament and superior glenohumeral ligament than did MR conventional serial scans ($p < 0.05$) (Table 4, Fig. 1, Fig. 2).

Table 4 Display rates of the two methods for different sites (%)

Group	Long head of biceps tendon	rostro-humeral ligament	Upper glenohumeral ligament
MR arthrography	44.44 (20/45)	33.33 (15/45)	40.00 (18/45)
MR routine sequence scan	84.44 (38/45)	57.78 (26/45)	73.33 (33/45)
χ^2	5.092	4.066	7.636
P	0.024	0.044	0.006

3. Discussion

The shoulder joint is the most mobile joint in the body and is often damaged by trauma and impact. Rotator cuff injuries are a common type of shoulder disorder and statistics show that the incidence of this condition is 30% of shoulder disorders[8-9]. Rotator cuff injuries are a common cause of shoulder pain and dysfunction, and the diagnosis of this condition is complex and often misdiagnosed as frozen shoulder[10]. There are two types of rotator cuff injuries, partial tears and complete tears, which are difficult to repair and can develop into complete tears when partial tears are not repaired in time or are not repaired properly[11]. Therefore, there is a need for timely and effective diagnosis of rotator cuff injuries and early treatment and intervention.[12] In recent years, with the development of diagnostic techniques, MRI has become a common method of examining the soft tissues of the shoulder joint[13]. Magnetic resonance indirect shoulder arthrography is also being used in the diagnosis of shoulder disorders, with significant advantages in lesions of the rotator cuff and glenoid

labrum.[14] Some studies have shown that MRI indirect shoulder arthrography is effective in improving the accuracy of diagnosis of rotator cuff injuries.[15]

The results of this study showed that MR arthrography had a sensitivity of 88.89%, specificity of 86.67%, accuracy of 70.00%, positive predictive value of 95.24% and negative predictive value of 72.22%, while MR conventional serial scan had a sensitivity of 84.44%, specificity of 93.33%, accuracy of 65.00%, positive predictive value of 97.44% and negative predictive value of 66.67%. was 66.67%, $P > 0.05$ for both methods, indicating that the two methods had more consistent sensitivity and specificity for rotator cuff injuries; arthroscopic diagnosis diagnosed 32 cases of inner layer tears, 5 cases of outer layer tears and 8 cases of intra-tendon tears; 14 cases of inner layer tears, 16 cases of outer layer tears and 15 cases of intra-tendon tears; MR arthrography diagnosed 23 cases of inner layer tears, 15 cases of outer layer tears and 15 cases of intra-tendon tears. 15 tears and 7 intra-tendon tears. In the oblique sagittal position, MR arthrography showed a higher rate of the long head of biceps tendon, rostro-humeral ligament and superior glenohumeral ligament than MR conventional serial scans ($p < 0.05$). This indicates that MR arthrography was more effective in diagnosing the patient's medial tears with more locations compared to arthroscopic diagnosis as a control. The reason for the above results is that the injection of contrast into the joint cavity during MR arthrography improves the contrast of the tissue in the joint cavity and clearly shows the glenoid lip within the joint capsule[16] ; compared to MR conventional sequences, MR arthrography shows the fine structures within the joint capsule more clearly to, shows images with a lesser degree of damage and can involve the tendon articular facet side - bursal facet side, with a wider range of monitoring, due to from It is more effective in diagnosing the patient's internal tears and more areas.

In conclusion, both MRI scan and MR arthrography of the rotator cuff have good diagnostic value for rotator cuff injuries, but MR arthrography is more effective in diagnosing internal tears in patients with rotator cuff injuries and can show more structures in the oblique sagittal position, which is more worthy of clinical use.

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Influencing Factors of Anger Induced by Patients in Medical Situations

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Abstract: Objective: This study was made to explore the inducing factors of patients' anger in medical treatment in order to provide a solid and reliable theoretical basis for preventing doctor-patient conflicts, improving doctor-patient relationship, and promoting doctor-patient harmony and social harmony. Method: develop the "Questionnaire of the Inducing Factors of Anger in the Doctor-patient Relationship"and use the State-Trait Anger Expression Inventory-2 (STAXI-2) to survey the 111 patients that had experienced medical disputes or doctor-patient conflicts and actually got angry in the conflicts in the Hospital of Dali University.The SPSS22.0 statistical software was used to establish database and analyze the obtained data. Result: 1. The Influence of demographic variable on the anger of patients. The anger of the patients between 46-55 years old was significantly higher than that of patients below 25, between 25-35 or above 66. Patients with junior high school degree or lower had the highest emotion of anger, and then those with senior high school degree (including technical secondary school) followed. Patients with no jobs had the highest emotion of anger, and then farmers and workers followed, which were significantly higher than that of patients engaged in other occupations. Patients with the monthly income of RMB 2000 yuan or lower had the highest emotion of anger, and then those with no stable source of income followed, which were significantly higher than those with higher monthly income. 2. The anger of patients was significantly negatively correlated to their trustfulness in medial workers, but significantly positively correlated to medical costs, the communication with medical workers, their cognition of the medical condition, medical workers' disclosure of patients' condition, the medical treatment effect, medical workers' problem-solving ability, medical facilities and environment and medical workers' professional level. Conclusion: In the medical treatment, the main inducing factors that may evoke the anger of patients are: the communication with medical workers; the attitude of medical workers; medical treatment effect; medical workers' professional level.

Keywords: Medical Treatment; Patients' Anger; Inducing Factor

Introduction

Medical disputes have become one of the major social problems that seriously restrict the development of medical and health care in China today. The doctor-patient relationship in the field of medical service is increasingly tense, and the number of medical disputes shows a rising trend of diversification [1]. The study shows that in [2] 33.48% of doctors have experienced disputes in the past 12 months, 20.86% have experienced riots, 48.52% have experienced verbal violence, and 5.84% have experienced physical violence. The study pointed out that anger is one of the most intolerable negative emotions, the greatest impact on interpersonal and social harmony, and the most closely related to disease [3-4]. The anger of the patient can damage the doctor-patient relationship, and even occur aggressive behavior [5]. Therefore, this study through the Dali

university affiliated hospital patients and their families medical disputes or the situation and the influencing factors analysis, understand the influence factors of anger in medical situation, to prevent the occurrence of doctor-patient conflict, improve the doctor-patient relationship, promote doctor-patient harmony and social harmony provide a solid credible theoretical basis.

1. Objects and Methods

1.1 Study subjects

Patients from the six departments of Yunnan Dali University (Cardiovascular Department, Respiratory Department, General surgery Department, Orthopedics Department, Obstetrics and Gynecology Department, Pediatrics Department) who met the following inclusion criteria were selected as the research subjects. Inclusion criteria: (1) Patients and their families who have experienced medical disputes or doctor-patient conflicts.(2) Can communicate and communicate normally, without mental illness.(3) Volunteer to participate in this study.

This study was reviewed by the Ethics Committee of the Affiliated Hospital of Dali University in Yunnan Province, and all respondents signed informed notices.

1.2 Survey tools

1.2.1 Questionnaire on inducing factors of anger in medical situation

A self-compiled questionnaire was used to collect the inducing factors of anger in the doctor-patient relationship, including gender, age, educational background, occupation, monthly family income, and attending doctor. The questionnaire was used for one-to-one visits to 10 randomly-selected patients who had experienced medical disputes or doctor-patient conflicts, the questionnaire was modified according to the answers of the interviewees, and 5 experts from our hospital were invited to discuss and modify the questionnaire.

1.2.2 State Trait Anger Expression Questionnaire STAXI-2

The Spielberger (State-Trait.Anger.Expression.Inventory., STAXI-2) [6] This scale of 57 items is used to assess anger personality traits (trait anger scale), situational anger scale (state anger scale) and anger expression scale (anger expression scale). The scale has a Cronbach'sα coefficient of 0.83.

1.3 Investigation method

In this study, a face-to-face questionnaire was used in the six departments (cardiovascular, respiratory, general surgery, orthopedics, obstetrics and gynecology, and pediatrics departments of the Affiliated Hospital of Dali University in Yunnan Province. Before the survey, the study subjects were informed about the investigation purpose and signed the informed consent form.

1.4 Statistical analysis

The SPSS22.0 statistical software was used to establish the database, and two people checked the data. Statistical description by frequency, rate, and mean ± standard deviation, Univariate analysis was performed by univariance analysis, multiplicity analysis by non-conditional Logistic regression model $P < 0.05$ as statistically significant.

2. Result

2.1 Basic information of the study subjects

A total of 111 survey respondents were included in this study. The sex ratio between men and women is about half each. In terms of age, 27.9% were 26–35 years old, and 24.3% were 36–45 years old. In terms of the highest degree, 31.5% of the surveyed patients had high school education (including technical secondary school), and 26.1% had the highest bachelor's degree. In this survey, staff and workers accounted for a relatively high proportion, with 35.1% and 27.9% respectively.58.6% of the patients lived with their families. More than half (63.1%) of the patients' medical expenses were

covered by medical insurance.39.6% of the patients who participated in the survey were charged by chief physician or professor . The monthly income of 28.8% of the patients was 2001-5000 yuan.

2.2 Demographic variables of patient anger

The results of one-way variance analysis showed that patients who aged 46-55, junior high school or below, no work, other living conditions, self-funded, personal monthly income of less than 2000 yuan were more likely to have anger mood($P<0.05$).

2.3 Descriptive analysis of patient anger

With patient angry, illness severity, the degree of trust in doctors, medical price, communication situation, the cognitive level of the patient's condition, degree of disease notification , medical effect, medical ability to deal with problems, medical attitude, medical equipment and environment and medical professional level all items plus average, get the following results. Compared with the mean size of each factor,the average value of the communication situation is the highest, indicating that patients have the highest dissatisfaction with the communication. Among them, the trust degree of the medical side is the positive score, and the higher the score value indicates, the higher the satisfaction degree. See Table 1.

2.4 Multivariate analysis of patient anger

Table1 Descriptive analysis of patient anger

	Minimum	Maximum	$\bar{x}$	*s*
Anger	1.00	5.00	3.71	.75
The severity of the condition	1.00	5.00	3.77	1.16
The degree of trust of the medical side	1.00	5.00	2.21	1.07
Medical price	1.00	5.00	3.33	1.03
Communication situation	2.00	5.00	3.93	.95
The cognitive level of the patient's condition	1.00	5.00	3.78	1.09
Degree of disease notification	1.00	5.00	3.84	1.03
Medical effect	1.00	5.00	3.33	1.05
Medical ability to deal with problems	1.00	5.00	3.30	1.02
Medical attitude	1.33	5.00	3.25	.66
Medical side equipment and environment	1.00	5.00	3.33	1.03
Medical professional level	1.00	5.00	3.88	.96

With anger occurring as the dependent variable (0= no, 1= yes), the meaningful variables in the analysis of variance were included in the multivariate Logistic regression model. The results showed that the four factors of independent variable communication situation, pressure effect, medical professional level and medical attitude were included in the equation, and the four factors explained 77.2% of the total variation of patients' anger. Communication is a negative prediction of patient anger ($\beta = -.481$, $p<0.001$), Medical effect ($\beta = .220$, $p<0.01$), and the medical professional level ($\beta = .182$, $p<0.01$) and the medical attitude ($\beta = .155$, $p<0.01$) had a positive predictor of patients' anger. This indicates that the better the communication between doctors and patients, the lower the patient's anger; the greater the gap between the medical effect and expectations, the lower the professional level and the worse the attitude, the more angry the patients will be. See Table 2.

Table 2 Regression analysis of each factor and patient anger

Predictive variable	*B*	*SE*	*β*	*t*	R^2	*F*
Constant	.554	.193		2.871**		
Communication	-.381	.055	-.481	-6.892***	.772*	89.837***

situation				
Curative effect	.158	.047	.220	3.383**
Medical professional level	.142	.048	.182	2.950**
Medical attitude	.178	.069	.155	2.588*

3. Discussion

3.1 The effect of demographic variables on patient anger

The results of this study show that:Anger was significantly higher in patients aged 46 – 55 years than in those under 25,25 – 35 and over 66 years old patients. This is mainly due to the age group of 45-55 patients may be in menopause on the one hand who are stepping into the old age from the middle age gradually, anxiety and irritability are their psychological characteristics of this stage. On the other hand, compared with patients under the age of 25, they have more life experiences, more life pressure and work pressure,Middle-age adults who must help both their children and their aging parents. Once they get sick, it is difficult to accept no matter psychologically or physically. Unlike elderly patients aged over 66, it seems that they have had "prepared" very early , since patients under the age of 25 which many are children who with a poor understanding of the diseases and the treatment of diseases , Therefore, the patients who have better compliance with the treatment plan given by the doctor which it is not easy to produce conflict between doctors and patients, and natural anger occurs very rarely as a consequence.

Patients with a junior high school education or below had the highest anger, followed by patients with a senior high school (including technical secondary school) education. It shows that patients with lower education background are more likely to have anger in the medical situation, and the education level of patients is directly related to anger which is consistent with the results of the study by Zhu Lin [7] et al.

Non-working patients had the highest anger mood, followed by farmers and workers, significantly higher than those in other occupations. Non-employed self-funded patients had the highest anger levels, followed by others paying, significantly higher than anger in health insurance and public patients. Patients with personal monthly income below 2,000 yuan had the highest anger, followed by patients with no stable source of income, which was significantly higher than that of other patients with personal monthly income period. Patients without work may not have a stable source of income. First of all, they cannot pay high medical expenses when they are sick, and cannot cooperate with the treatment of the disease. When they are sick, they can directly blame the society and the hospital, and vent their anger on the medical staff. Secondly,patients who without a job and a stable income are more psychologically vulnerable, like being abandoned by the society, and even think that their own existence is insignificant, once they are sick, they come to the hospital for medical treatment, it is particularly easy to produce anger motion when they cannot satisfy with the doctors and nurses communication attitude or treatment,they even hatred of social psychological [8].

3.2 The influence of each factor on the patient's anger

3.2.1 Communication situation

Doctor-patient communication is the basis of medical activities. Good doctor-patient communication helps doctors to collect patient information, give correct diagnosis or timely and effective treatment plan [9]. Looking at the current situation of medical treatment in China, the causes of medical disputes are analyzed. According to statistics, 80% of medical disputes are caused by poor communication between doctors and patients, and the remaining 20% of medical disputes are also [10] caused by the lack of communication between doctors and patients or related to medical technology. Due to the relative shortage of medical resources in China, While the people's awareness of health protection is gradually improving, medical staff workload has increased dramatically, In order to ensure the completion of the prescribed diagnosis and treatment norms

and document writing, and the signature of the relevant informed consent form, In order to complete various written tasks, resulting in the time constraints for doctor-patient communication[11], The relative shortage of medical resources and the shortage of medical staff result in the lack of enough time to understand the psychological and physiological needs of patients,so it is difficult to conduct a complete and necessary doctor-patient communication[12], Some healthcare providers lack communication skills with patients and incorrect communication attitudes, These factors contribute to patients' ignorance of their own disease, Not understanding the treatment plan and care given by medical staff,even produce misunderstanding, causing the anger of patients, may also cause unnecessary conflicts between doctors and patients seriously.

3.2.2 Medical attitude

Medical attitude for patients in the process of the harmony of doctor-patient relationship plays a pivotal position, medical language blunt, indifference, Patients who are sick will feel that they are not getting the care they deserved, also think the relationship between themselves and doctors present a superior, distancely, naturally produce a resistance to doctors, some medical staff in the process of diagnosis and treatment is out of concentrated, even the attitude is very bad, and some doctors have long been numb to the pain of patients, such the attitude makes the patient feel disappointed, and even makes the patient producing angry mood [13].

3.2.3 Medical professional level and medical effect

The professional level of the medical side is directly related to the medical effect. The medical effect is restricted by various factors, including the professional level of the medical side, the moral cultivation of the medical side, the physical quality of the patient, the psychological quality of the patient, the equipment and conditions of the hospital. Of course, with the poor professional level of the medical side, the doctors themselves can not control the patient's disease freely, and can not be confident in the diagnosis and treatment of the disease, and can not clearly answer the questions of the patients, and may even be confused. However, once due to the poor professional level of the medical side, the treatment process and medical effect of the disease displease the patient, the patient's anger arises spontaneously, and even produces verbal or physical attacks, causing adverse effects.

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Fund Project: Yunnan Provincial Philosophy and Social Science Planning Project (YB2013033), Key Project of Yunnan Provincial Department of Education (2015Z152), Doctor Launch Fund Project of Dali University (KYBS201101). Huang Hui and Zhang Yixiao are mainly responsible for the collection and writing of the subject data; Fu Yanfen and Yang Lin are responsible for the guidance and revision work.

Multi-Slice Spiral CT Diagnosis of Septic Pulmonary Embolism Caused by Infective Endocarditis

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Abstract: Objective: To analyze the multi-slice spiral CT manifestations of septic pulmonary embolism caused by infective endocarditis, and improve the understanding and imaging diagnostic ability of this disease. Method: 50 infected SPE patients who visited our hospital from January 2020 to January 2021 were selected. Through detailed analysis of the CT diagnosis results of the patients, the characteristics of SPT under multi-slice spiral CT scanning were understood, the pulmonary artery manifestations of the patients were observed, and the pulmonary display of the patients' primary heart disease and vegetations was determined. Result: There were 19 fungal pulmonary aneurysms in 16 cases, of which 5 were solitary, with 10 cystic, 6 irregular edges, and 4 thickened walls. The filling defects were located in 4 peripheral and 3 distal segments, and 4 were more common in the outer basal segment of the lower lobe and the inner segment of the right middle lobe. There were 2 proximal and 3 middle segments of the pulmonary artery. Three cases showed halo signs around the aneurysm, and four cases had rapid enlargement of the pulmonary artery contour during the acute phase. Among them, three cases shrank and became thinner after anti infection treatment. Before treatment, 5 cases had slightly thickened pulmonary arteries due to embolism. 20 cases of electrocardiographically gated whole chest cardiac large vessel CT angiography were able to clearly display cardiac lesions, with 15 cases showing pulmonary endarteritis, which showed rough and irregular thickening of the pulmonary artery wall, including 10 cases of local swelling. 11 cases showed vegetations. 5 cases underwent chest enhancement scan, showing 5 cases of cardiac lesions and 5 cases of vegetations. All 50 cases had multiple and multiple forms of lesions in both lungs, including patchy infiltrative shadows, wedge-shaped shadows, nodules, and cords. The first three may be accompanied by cavities and airbags, while wedge-shaped shadows and nodules may be accompanied by nutrient vessel signs, mainly distributed around the lungs. Conclusion: For patients with SPE, the use of multi-slice spiral CT for diagnosis is more efficient, and this method is currently the best method for examining the disease.

Keywords: Endocarditis; Bacterial; Pulmonary Embolism; Tomography; Spiral Computer

1. Materials and Methods

1.1 Research subjects

We selected 50 SPE infected patients who visited our hospital from January 2020 to January 2021, including 16 females and 34 males, aged 21-68 years, with an average age of 45.2 years. Admission criteria: the patient was diagnosed with infective endocarditis, which led to the diagnosis of SPE. And the patient needs to undergo a doctor's chest CT examination. Exclusion criteria: After removing SPE, the patient does not have any other serious diseases, such as cardiovascular or cerebrovascular diseases or cancer. Secondly, the clinical data of the patient needs to be completed, and if it is not complete enough and lacks relevant information, the patient cannot participate in the study. Finally, the patient's image has large false images and the display of the lesion status is not clear enough.

1.2 Diagnostic criteria

Main criteria: 1. Positive blood culture; The image of infective endocarditis was positive. Secondary criteria: 1. Risk

factors; 2. Heating; 2. Vascular phenomenon; 4 immune signs; 4 Microbiological evidence. Diagnosis requires meeting 2 main criteria, 1 main criterion+3 secondary criteria, or 5 secondary criteria. SPE diagnosis adopts clinical diagnostic criteria such as Cook, and must simultaneously meet the following four criteria: 1. Focal or multifocal lung infiltration shadows; 2. There are active extrapulmonary infectious foci that can serve as sources of septic emboli; Exclude other diseases that may cause lung infiltration shadows; After reasonable treatment with antibiotics, lung infiltration shadows are absorbed.

1.3 Instruments and Methods

Using Siemens Somatom Definition Flash dual source CT and Canon 640 layer volumetric CT scanner (Aquilion ONE, Toshiba Medical Systems) CT. All patients underwent chest CT plain scan, ranging from the apex to the bottom of the lungs, with a window width of 1200-1500Hu, a window position of -600Hu, a mediastinal window width of 250-350Hu, and a window position of 40-50Hu. Nine patients underwent electrocardiographic gated whole chest CT angiography (dual source CT) of the large blood vessels of the heart. The contrast agent was used, with a dose of 320mgI/ml of iodozolol and dual flow injection. The dosage was 1.0 to 1.5ml/kg at the age of 3 to 14 years, with a flow rate of 1-3 ml/s. The left atrium at the four chamber level was used as the trigger layer, and the trigger threshold was 80 Hu; 14-55 years old, dosage 0.8-1.2ml/kg, flow rate 4-5ml/s, with ascending aortic root layer as triggering layer, triggering threshold of 100Hu, Bolus Tracking triggering, tube voltage of 80-100kV, automatic milliampere second, collimation width of 0.6, pitch of 0.17, reconstruction layer thickness of 1.0mm, reconstruction interval of 0.8mm, matrix 512 × 512。 Ten patients underwent chest enhancement examination (64 slice CT). The contrast agent was iohexol, 350mgI/ml, dosage 1.0~1.2ml/kg, flow rate 3~4ml/s. The ascending aorta layer 2cm below the tracheal carina was used as the trigger layer. The trigger threshold was 100Hu, and Bolus Tracking was used as the trigger.

2. Results

2.1 General Conditions of Patients: The main clinical manifestations of the 25 patients in this group are as follows:

There were 20 cases of fever and 15 cases of hypoproteinemia. There were 9 cases of PDA, 1 case of pulmonary artery foreign body, 2 cases of cardiac congenital malformations or more, 6 cases of interventricular septum defect, 2 cases of aortic sinus rupture into the right atrium, 1 case after cardiac pacemaker replacement, and 2 cases of tricuspid valve vegetations. All 17 cases of cardiac ultrasound detected vegetations, including 14 cases of right heart system vegetations, 3 cases of left and right heart vegetations, and 1 case of PDA with left heart vegetations. Among the 17 cases, 1 case was misdiagnosed as pulmonary sequestration, 2 cases as tuberculosis, 1 case as conventional pulmonary embolism, 1 case as tumor, 1 case as pneumocystis carinii infection, 1 case as missed diagnosis, and the rest were diagnosed as common pneumonia. Eight patients underwent one or more follow-up examinations after 2 days to 8 months. 14 cases were confirmed by surgery, 2 cases received anti infection treatment, 1 case received interventional treatment, and 1 case was discharged automatically. All patients received one or more blood cultures, of which 9 were positive, including 6 cases of Streptococcus, 2 cases of fungi, 1 case of staphylococcus, and 1 case of gram-positive bacteria.

2.2 Pulmonary artery manifestations of SPE

There were 6 cases of MPAA, a total of 9 cases, and 4 cases were positive for blood culture, including 2 cases of Streptococcus, 1 case of Staphylococcus aureus, and 1 case of fungi, among which 2 cases were multiple. The basal segment outside the lower lobe of both lungs and the medial segment of the middle lobe of the right lung are more common, with one common occurrence. There are 5, 4, and 1 pulmonary artery in the proximal, middle, and distal segments, respectively. Two cases and three aneurysms showed peripheral halo sign on plain scan, with 6 showing cystic shape and 6 showing spindle shape, 6 with irregular edges, 4 with thickened tumor wall and attached filling defect, and 2 with interface change at the distal end. The diameter of the aneurysm was about 0.3-2.5cm, with an average of 1.2cm. Three acute pulmonary aneurysms rapidly increased, with 2 cases shrinking and thinning after anti infection treatment, 1 case unchanged, and 1 case increasing

after 8 months; Before treatment, 4 cases had slightly thickened pulmonary arteries due to embolism.

2.3 Display of primary heart diseases and vegetations on SPE

Nine cases of cardiac gated whole chest CT angiography of large blood vessels were able to clearly display cardiac lesions. 5 cases presented with pulmonary endarteritis, including 1 case of pulmonary artery foreign body adjacent to the apex of the pulmonary artery, 4 cases of PDA, and 1 case of complex congenital heart disease with PDA. The pulmonary artery wall in front of the patent ductus arteriosus was rough and irregularly thickened. Distributed on the left upper wall of the main pulmonary artery in 2 cases, anterior upper wall in 1 case, left wall in 1 case, right wall in 1 case, left pulmonary artery inner upper wall in 1 case, and local swelling in 3 cases. 6 cases showed vegetations in the pulmonary artery, 4 cases showed spot, strip and patch filling defects, and 2 cases showed tricuspid valve; Pulmonary valve and tricuspid valve in 1 case showed thickening and partial calcification of the valve. 5 cases underwent chest enhancement scan, and 3 cases showed cardiac lesions. Vegetation was found in 3 cases, located in tricuspid valve in 3 cases, and in pulmonary artery valve and tricuspid valve in 1 case.

2.4 Pulmonary Manifestations of SPE

All 25 cases had multiple and multiple forms of shadows with 2 or more types in both lungs. Patchy infiltrating shadows and blurry edges appeared in 10 locations of 6 cases, with 1 location accompanied by cavities and airbags. In 14 cases, wedge-shaped shadows appeared at 24 locations, with a wide base close to the pleura and a tip pointing towards the hilum of the lungs, without enhancement; 7 cases were accompanied by cavities and airbags, and 5 cases were accompanied by nutrient vessel signs. 151 nodules appeared in 15 cases, mainly distributed around the lung, with a diameter of 0.4-3.6cm; 47 cases were accompanied by cavities and airbags, 45 cases were accompanied by trophoblastic vascular signs, and 12 cases showed subpleural cord strips.

2.5 SPEPulmonary Manifestations of

Among the 10 patients who underwent follow-up, 6 showed partial absorption, partial enlargement, or new lesions, 1 had rapid short-term progression, 2 had no significant changes, and 1 had slight absorption.

3. Discussion

SPE is caused by an extrapulmonary infection that causes a pathogen containing embolus to detach and embolize the pulmonary artery, resulting in pulmonary embolism (or infarction) and focal pulmonary abscess. In addition to the common respiratory symptoms of pulmonary embolism, SPE is often accompanied by fever, pulmonary infiltrates, and primary manifestations. SPE is mostly related to infective endocarditis, thrombophlebitis, infection after central vein catheterization, liver abscess, changes after intravenous drug addicts or immunosuppressive treatment of malignant diseases of the blood system, among which infective endocarditis is most common in the right heart, and a few bacterial emboli of the left heart system can enter the right heart system through cardiac anatomical structure abnormalities, causing SPE. The incidence of 14 cases of right heart infective endocarditis in this group is consistent with that reported in previous studies. The typical CT manifestations of SPE are nodules, subpleural wedge-shaped shadows, with or without cavity formation and nutrient vessel signs, which are important clues for diagnosing SPE, but have no specificity.

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Some Thoughts on the Development of Biomedical Engineering Technology and industry in China

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Abstract: This paper briefly introduces the development status of domestic biomedical engineering, summarizes the current mainstream biomedical engineering technology, and analyzes the development of nanomedicine, genetic drugs and regenerative medicine. Combined with the current medical development in China, it puts forward strategies such as realizing the development of the whole industrial chain, perfecting the patent support and establishing the industrial development road combining "production, learning and research", with a view to helping the relevant units to better understand the development direction of China's biomedical engineering technology and industry, and providing references to further promote the development of this field.

Keywords: Biomedical Engineering Technology; Industrial Development; Whole Industry Chain

1. State of development of domestic biomedical engineering

The 21st century is the century of vigorous development of biotechnology and biomedicine, which are closely related to human life and widely used in the fields of food, medicine, bioenergy, biocatalysis, etc., and have become one of the most rapidly developing high-tech industries today. In order to promote the construction of a healthy China, the Central Committee of the Communist Party of China and the State Council issued the "Healthy China 2030 Planning Outline", which explicitly proposes to accelerate the development of biopharmaceuticals and the health industry, cultivate high-tech health enterprises, promote the in-depth fusion of medical and research enterprises, build up a complete health industry system, and develop large-scale, independently-innovative large enterprises with international competitive advantages, so as to make them become the pillar industries of the national economy. Pillar industries. It is expected that by 2030, the size of the health service industry will reach 16 trillion dollars, accounting for about 10% of GDP. However, at present, the proportion of complex biomedical talents required by the biomedical and health care industry is less than 10%, which poses a major limitation to the development of biomedical engineering in China[1] .

2. Overview of current mainstream biomedical engineering technologies

2.1 Nanomedicine

Nanomedicine is an important part of today's biomedical field, which originated from nano-biopharmaceuticals and has been widely used in the treatment of tumors and cardiovascular diseases. The importance of nanomedicine is becoming more and more prominent with the emergence of new nanomaterials and technologies. For example, with the help of nanomedicine technology, tiny diagnostic and therapeutic devices can be implanted in the patient's body, which will move with the blood flow and thus accurately transmit information about the disease; at the same time, nanotechnology is also able to treat ordinary drugs to reduce side effects and improve the efficacy of the drugs. Therefore, through the in-depth exploration of nanomedicine projects, the goal of multidisciplinary intersection of living organism behavior, disease pathogenesis, early diagnosis and treatment of diseases will be realized.

Although nanomedicine plays an important role in this regard, there are still some problems to be solved. At present, only a few nanoparticles can be directly applied to the clinic, and they are mainly used for tumor cell killing, and a large number of them have not been fully applied. Therefore, the relevant units should further develop medical nanoparticles that are easy to be applied clinically, durable and have therapeutic functions, or process drugs through the composite structure of nanoparticles to achieve rapid and broad-spectrum therapeutic effects. At the same time, the combination of gene therapy and nanotechnology can effectively reduce the possibility of rejection caused by gene carriers. In addition, more research is needed on whether the long-term use of nanomaterials will have a negative impact on humans.

2.2 Gene drugs

With advances in biotechnology, researchers have found that some diseases are associated with genetic defects, so that when treating diseases, single-target therapeutic drugs with high specificity and selectivity can be developed against the disease-causing genes, in order to reduce drug toxicity and improve drug efficacy. In the current situation, research on gene drugs needs to pay more attention to their selectivity, because there are differences in the genes of different regions and ethnic groups, so the same gene drugs cannot simply be applied. For example, the types of tumors that are more common in China may be different from those in the United States, and thus the need for genetic drugs is different. Generic foreign genetic drugs may lose their efficacy or even aggravate the condition due to genetic differences, so it is crucial to conduct selective research on genetic drugs[2] .

In addition to selective research, there is a need to improve the concepts and strategies for the development of genetic drugs. Over-emphasizing the target specificity of a drug may lead to the loss of normal function of the target, resulting in long-term toxic side effects. In addition, when developing a single gene drug, the lack of effective regulatory measures, including network regulation and pathway regulation, may affect the clinical efficacy of the drug. Therefore, in promoting the development of gene drugs, it is important to think deeply about existing R&D strategies and develop optimal R&D strategies based on the needs of the healthcare industry.

2.3 Regenerative medicine

Regenerative medicine is a new type of biomedicine based on cellular self-repair and regeneration, in addition to surgery and drug therapy. Important progress has been made in the fields of sweat gland regeneration, iPSCs and sub-totipotent stem cells, providing new ideas for organ replacement, tissue replacement, joint replacement, repair of soft tissues and muscles, skin transplantation and other treatments. However, the current development of regenerative medicine in China has yet to be realized. In the current development of regenerative medicine need to first solve the key issues of tissue regeneration and repair theory, such as the mechanism of tissue regeneration and repair, the role of adult and embryonic stem cells in tissue regeneration and repair induction and differentiation.

In addition, it is necessary to break through the existing tissue regeneration and repair technologies, use regenerative medicine technologies for peripheral nerves, central nerves, cardiac muscles, corneas, livers and skins for clinical applications, and establish stem cell databases to effectively protect and verify the regenerative functions of stem cells. This will provide the theoretical basis and technical support for the treatment of difficult-to-treat diseases in the clinic and promote the application process of regenerative medicine. In addition endogenous regeneration technology utilizes biomaterials similar to the grid structure of the human body, which can be quickly identified and effectively connected with body tissues, thus realizing simultaneous tissue regeneration and material degradation, which is expected to bring important breakthroughs and progress in the field of regenerative medicine.

3. Biomedical industry development path analysis

3.1 Realization of the development of the whole industrial chain of the biomedical engineering industry

Realizing the development of the whole industrial chain of the biomedical engineering industry is an important goal for the development of China's biomedical field. To realize the development of the whole industry chain, it is first necessary to strengthen scientific research and innovation and promote technological breakthroughs. Through continuous investment and support, promote the integration of basic research and applied research, and cultivate more excellent research teams and talents. At the same time, enterprises are encouraged to increase R&D investment, strengthen technological innovation, promote the transformation and application of technological achievements, and build a perfect biomedical engineering industry chain. From basic research to applied research, to technology development and product manufacturing, it is necessary to form a complete industrial chain and realize the layout of the whole chain from upstream to downstream.

3.2 Encouraging the establishment of an industrial development path combining "production, learning and research"

Encouraging the establishment of an industrial development path combining "industry, academia and research" can promote in-depth cooperation and synergistic innovation among industries, institutions of higher learning and scientific research institutes, realize the complementary advantages of resources, promote the transformation of scientific and technological achievements into market-competitive actual products, and promote industrial upgrading and innovation. At the same time, enterprises can sign cooperation agreements with institutions of higher learning and scientific research institutions to establish joint R&D teams to jointly carry out scientific and technological research and technology development. At the same time, enterprises can also cooperate with colleges and universities and scientific research institutions to cultivate composite talents and establish an integrated talent training system of industry, academia and research[3] . At the same time, they can also actively introduce excellent scientific research talents and technical experts to inject new vitality and power for industrial development.

3.3 Strengthening patent management in the biomedical industry and protecting the interests of relevant researchers

Through patent protection, researchers can legally authorize and license their achievements and thus receive reasonable remuneration. On the one hand, this protects the researchers' rights and interests in innovation and enhances their motivation to innovate; on the other hand, this prevents others from using others' patents without authorization and protects a level playing field in the biomedical industry. Meanwhile, under the environment of patent protection, enterprises can also be more assured of investing a lot of money and resources in research and development, and since their research and development results will not be easily copied by others, they will participate more actively in the development of the biomedical industry, leading to the rapid growth of the industry.

Conclusion

In the wave of rapid development of global science and technology, biomedical engineering in China has made remarkable achievements, showing great potential and competitive advantages. However, we should also recognize that while technological breakthroughs have been made, there are also many important issues such as ethics and safety. Therefore, in the future development of biomedical engineering technology, the relevant research and development units still need to be cautious, and adhere to the concept of openness and cooperation, with international standards, and absorb the advanced experience, in order to realize the sustainable development of China's biomedical engineering technology and industry.

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Emergency Treatment of Fractures in the Elderly

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Abstract: With advancing age, individuals experience a decline in reaction ability and lower limb strength, which, when combined with the presence of osteoporosis, increases the risk of fractures in daily life if proper attention is not given. The most prevalent site of fracture in the elderly population occurs between the femoral neck and trochanter, followed by lumbar vertebral compression fractures and ankle facet fractures. Osteoporosis and age-related decline in bone and joint regulatory capacity are the primary factors influencing fracture occurrence among older individuals. Implementing scientifically-based treatments can alleviate pain in the elderly population, thereby establishing a solid foundation for effective medical interventions.

Keywords: Elderly; Fracture; Solution

Introduction

In today's aging population of the society, the elderly gradually become the focus of social and family attention, their well-being affects the hearts of children. People to old age, reaction ability and lower limb strength are declining trend, coupled with osteoporosis, in daily life, a little attention, fracture may occur. If the family can make a correct judgment at the first time and do some scientific treatment, it will lay a good foundation for relieving the pain of the elderly and effective treatment by doctors. According to the foreign research report, the mortality rate of senile fracture, especially hip fracture, is as high as 40% , while the five-year survival rate is only 20% , around the world, 10% to 40% of elderly patients with fractures will die within 1 month after surgery, and about 30% of patients will die within 1 year after discharge[1]. Fractures that do not receive adequate treatment and care have an extremely high case fatality rate. Therefore, people should face up to the severity of fracture, once the elderly have a fracture, we should quickly seek medical treatment, Tian orthopedic doctors, through symptoms, medical history, examination, assisted by X-ray photography, to know the degree of displacement and Communication of the fracture, and to choose the appropriate treatment according to the fracture shape. It is also important to consult the geriatric orthopedic surgeon to diagnose the patient's condition in a timely manner and to take the necessary preventive and care measures (including post-fracture rehabilitation), in order to avoid the occurrence of complications, to give patients a balanced and comprehensive nutritional supplement, try our best to maintain the quality of life of patients.

Common types of fractures

The most common site of a fall in the elderly is between the neck and trochanter of the femur. These are the places where stress changes direction as the force travels from the lower limb down the femoral shaft to the pelvis. The hip on the injured side loses its ability to move autonomously and can not stand when the fracture occurs. At this time should not move the patient, it is important to maintain hip stability, reduce thigh activity. People with cardiovascular and cerebrovascular diseases should take necessary preventive and therapeutic drugs in time to avoid fracture pain inducing or aggravating hypertension, stroke, angina pectoris, myocardial infarction and shock. Lumbar vertebral compression fracture is also a common senile fracture, mainly occurred in the thoracic vertebral body 11,12, lumbar vertebral body 1,2[2]. The upward

transmission of force along the spine, in the vertebral body shape changes in the site of accumulation, coupled with osteoporosis in the elderly, resulting in fractures. Pain in the lower back and difficulty in standing after injury. At this point, must not twist the patient's body, otherwise it is very easy to damage the spinal cord, resulting in paraplegia, but should be lying on the ground, moving one side of the shoulder and hip in the same plane, the so-called“Axial roll over” of the elderly fracture of another good place is the distal radius, mainly occurs when the hand on the ground, fracture local deformity pain, finger movement disorders, at this point should be used cardboard, towel suspension to maintain the relative stability of the forearm and palm, and try to pad up the palm, avoid sagging, so as not to cause local swelling, affect the reduction.

The ankle joint surface fracture, should pay attention to keep the injured foot elevated, prevent the dropsy time long appears the swelling to cause the skin to break the influence fixed, the prompt cold compress is the pain-relieving method, is also the anti-swelling wonderful trick. In addition to the fracture, in principle to maintain the stability of both ends of the fracture, can maximize pain relief because the enemy of fracture is pain. People with other diseases should take relevant drugs in time to prevent pain from causing other adverse effects on the body. For the fracture of the elderly, in addition to doing the necessary family treatment, should be timely medical treatment.

Solutions

Simple fixation operation of limbs fracture

(1) fixation of forearm fracture: the injured limb was placed at elbow bending position and pressed against the function position of anterior chest. Wrap the upper limb with a splint (small wooden or cardboard, book, bamboo, etc.) from the elbow to the palm. And then with a triangle scarf hanging on the chest. (2) fixation of upper arm fracture: a padded splint from acromion to elbow tip was placed on the outer side of upper arm, and the upper arm was fixed to the chest with a spiral bandage. If can not find a fixed material, can also be upper arm with a belt or cloth belt with the chest together, and cut a wound side of the front flap, fold outward, buckle on the first or second button fixed. (3) collarbone fracture fixation: first put a large cotton pad under two armpits, then use the bottom edge of two triangle scarf, respectively in two armpits to the shoulder before the knot, and then in the back of the triangle scarf two top angle tension knot. (4) rib fracture fixation: may use the multi-head belt fixation (if does not have the multi-head belt, may tear the wide cloth both sides to be the width same cloth strip, does not tear in the middle) . First in the fracture pad on a large cotton pad or sponge pad, ask the injured to hold his breath, multi-head band in the healthy side of the chest knot fixation. (5) fixation of thigh fracture: use a splint from heel to armpit length, or use a long wooden board (bamboo, wooden sticks can also be several) on the outside of the injured limb, thigh socket (that is, after the knee) slightly pad clothes, with bandage or towel, cloth band will be affected limbs and splint together with a number of fastening. If do not have appropriate material, can also wrap two lower limbs together, contralateral fixed affected limb. (6) shank fracture fixation: use small plank 2 pieces, put in shank inside and outside side respectively, or only use a splint to put in shank, shank outside, from above knee joint to foot, Wrap and fix. (7) spinal fracture fixation: the injured person is lifted to a large plank (door plank, table plank, plank can be) , supine, the body and plank fixed together[3].

Spinal injury

Crista column injury is usually caused by direct or indirect sudden shock or compression. If the injury is limited to the spinal cord or nerve hemorrhage, edema, its movement, sensory disorders for temporary, the future may recover. After the fracture of the crest column, the spinal cord and nerve lose their protection and are oppressed by displaced vertebrae or bone fragments, which can cause different degrees of paralysis. If the spinal cord is transected, it can not return to normal. After the fracture of thoracic vertebra and lumbar vertebra, the damage of crest marrow causes the paralysis of both lower limbs, the patient can not take care of themselves, the fracture of cervical vertebra causes the damage of crest marrow, because of

the high position, can cause the paralysis of limbs, even affect the breathing, it is a serious threat to the patient's life. Suspected Crista injured, rescue, transport must be careful, as far as possible to maintain the crista post-injury position, do not let the back bending or rotation. The patient must not be carried on the back or hunched over carrying. The correct way to transport the patient is to insert the patient's shoulders and back, waist and buttocks, and the back of both lower limbs with both hands, and then three people hold the patient up at the same time to maintain the level of the Crista column, to the Pinto method or rolling method on the rigid board stretcher (or bed board and other substitutes) on the transport. Take care to keep it steady during transportation. When turning the patient over, rotate the upper and lower body at the same time to avoid"Twist twist"-like movements that may damage the cristae column[4].

There are two basic influencing factors of fracture in middle-aged and elderly people: Osteoporosis reduces bone strength. 2. As a result of aging, bone and joint flexibility reduction, coupled with not paying attention to physical activity, bone and joint adjustment ability decline, increased opportunities for falls. Therefore, the prevention of fracture, mainly from the above-mentioned aspects, mainly to the following points. First, to promote the significance of fracture prevention to the elderly, so that they fully understand the importance of fracture prevention in daily life to prevent the occurrence of fracture. Second, the law of life, adequate rest, keep energetic, keep the brain to the surrounding environment good responsiveness. Third, maintain good living habits. Do not smoke, do not drink, pay attention to supplement calcium in the diet, reduce bone absorption, thereby reducing the chance of fracture. Fourth, adhere to physical exercise, enhance physical fitness, maintain good brain regulation and joint flexibility. Fifth, pay attention to the activities under special environmental conditions. The fracture of middle-aged and old people is common in some special environment. Such as winter snow, ice, up and down the stairs, toilets, bathhouses and so on. Special attention should be paid to these special circumstances. Although a fracture is an accident, it can be unpredictable. But as long as in the daily life of full attention to this problem, can greatly reduce the chance of fracture.

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Observation of Pelvic Floor Structure in Women Undergoing Second Natural Delivery Using Intelligent Pelvic Floor Ultrasound

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Abstract: Objective: To observe and study the pelvic floor structure of women undergoing second natural childbirth using intelligent pelvic floor ultrasound. Methods: Fifty pregnant women who completed second natural delivery in our hospital from April 2019 to April 2020 were selected as the experimental group, while 50 pregnant women who underwent first natural delivery during the same postpartum review were selected as the control group. Analyzing the test data of the two groups of patients, use two-dimensional ultrasound to observe whether there is pelvic floor organ prolapse and related parameter abnormalities in the two groups of pregnant women, and measure the movement of the bladder neck, urethral rotation angle, and posterior bladder angle of the pregnant women under Valsalva status; Real-time three-dimensional ultrasound was used to measure the area of the levator ani muscle hiatus under resting and Valsalva conditions, and to measure the pelvic floor muscle strength of the two groups of pregnant women. Results: There was no significant difference between the two groups in bladder neck movement, urethral rotation angle, and posterior bladder angle under Valsalva status (P>0.05). There was no statistically significant difference in the area of levator ani muscle hiatus between the two groups of parturients at rest [(14.00 ± 3.76) cm^2 vs (14.51 ± 3.60) cm^2] and Valsalva [(24.98 ± 326) cm^2 vs (25.53 ± 3.40) cm^2] (P>0.05); There was no significant difference in the incidence of pelvic floor organ prolapse and related abnormalities between the two groups (P>0.05); There was no statistically significant difference between the two groups in the unqualified rate of Class I (64.07% vs 69.00%) and Class II pelvic floor muscle strength (74.58% vs 78.00%) (P>0.05). Conclusion: The incidence of abnormal pelvic floor structure in women after second natural delivery is not significantly higher than that after first natural delivery, which provides imaging evidence for clinical guidance in selecting delivery methods and postpartum pelvic floor rehabilitation training for women after second natural delivery.

Keywords: Pelvic Floor; Pelvic Floor Dysfunction Disease; Levator Ani Muscle Hiatus; Ultrasound Examination

1. Data and Methods

1.1 Research object

A retrospective analysis was conducted of 100 pregnant women who gave birth in our hospital from April 2019 to April 2020, and 50 pregnant women who had a second natural delivery. They were selected as the experimental group, while 50 pregnant women who had a first natural delivery during the same postpartum review were selected as the control group. Inclusion criteria: 6-9 weeks postpartum; Both were first or second spontaneous vaginal delivery; Full term delivery; No extension of the second stage of labor; No macrosomia; No fetal head suction, forceps, and third degree perineal laceration were used during delivery; There were no severe internal surgical complications in the pregnant women; The first delivery history of the second delivery women met the above criteria, and the included women received intelligent pelvic floor ultrasound examination and pelvic floor muscle strength measurement at the same time. The difference between the two examinations was within 3 days. Exclusion criteria: Other pregnancy and childbirth histories other than those in this study,

including those with vaginitis, urinary system infection, postpartum hemorrhage, and incomplete lochia, as well as a history of pelvic surgery. The 100 pregnant women were divided into a primipara group with 50 cases of first natural childbirth and a multipara group with 50 cases of second natural childbirth. The age of the control group was 21-36 years old, with an average of (27.34 ± 2.81) years old, and the average gestational week of delivery was (39.00 ± 0.97) weeks; The age of the experimental women group was 23-41 years old, with an average of (31.38 ± 4.12) years old, and the average gestational week of delivery was (39.61 ± 1.18) weeks. This study was approved by the hospital ethics approval committee, and all pregnant women had informed consent.

1.2 Instruments and methods

1.2.1 Pelvic floor ultrasound examination

Mindray Resona8s ultrasound diagnostic instrument, D8-4U probe, frequency 4~8MHz is used. After emptying the stool and defecation, the subject takes a bladder lithotomy position, initiates two-dimensional ultrasound examination to obtain a midsagittal section, instructs the pregnant woman to perform Valsalva maneuver, and observes whether there is any prolapse of pelvic floor organs. The intelligent pelvic floor measurement tool (SmartPelvic) - automatic anterior pelvic evaluation system is used to obtain the bladder neck movement, urethral rotation angle, and posterior bladder angle under Valsalva status; Start real-time three-dimensional ultrasound examination, and instruct the pregnant woman to perform Valsalva maneuver to observe the changes in the shape of levator ani muscle fissure under both states. Use the intelligent pelvic floor measurement tool (SmartPelvic) to measure the area of levator ani muscle fissure (HA) under resting state and Valsalva state, respectively.

1.2.2 PFD ultrasound diagnostic criteria

PFD was diagnosed using the criteria in "Practical Pelvic Floor Ultrasonography", and all parameters were measured at the maximum Valsalva state.

1.2.3 Pelvic floor muscle strength testing methods and evaluation standards

The pelvic floor muscle strength (class I and class II) of the two groups of pregnant women was monitored using the PHENIX U4 therapeutic instrument. Class I and Class II muscle strength are both 0-5 levels, with muscle strength ≥ 3 being qualified, and muscle strength<3 being unqualified. One experienced physician completed the pelvic floor ultrasound examination and pelvic floor muscle strength measurement using a blind method, and the two physicians were unaware of the examination results.

1.3 Statistical analysis

Using SPSS22.0 software, the measurement data conforming to the normal distribution were expressed in x ± s, and the independent sample t-test was used for inter group comparison. The counting data were compared between groups using χ In the 2-test, P<0.05 indicates a statistically significant difference.

2. Results

2.1 General information

Compared with the primipara group, the menopausal women group had significant differences in age, high pre pregnancy body mass index (BMI), and low proportion of painless labor (P<0.05); There was no statistically significant difference between the two groups in terms of the second stage of labor time, the proportion of lateral episiotomy/first and second degree perineal laceration, neonatal body mass, and neonatal head circumference (P>0.05). 2.2 Intelligent pelvic floor ultrasound results

When comparing Valsalva's movements, two-dimensional ultrasound observation showed that various organs of the pelvic floor moved towards the dorsal and caudal side of the human body, and real-time three-dimensional ultrasound observation showed that the area of the levator ani muscle fissure increased. Compared with the primipara group, the area of

levator ani muscle hiatus, bladder neck movement, and urethral rotation angle were larger in the multiparous group under resting and Valsalva conditions, while the posterior bladder angle was smaller, with no statistically significant difference (P>0.05); The incidence of pelvic floor organ prolapse (uterine prolapse, anterior rectal wall prolapse, excessive movement of the perineal body) and related parameter abnormalities (such as increased bladder neck movement, opening of the posterior horn of the bladder, increased area of the levator ani fissure, and funnel-shaped opening of the inner orifice of the urethra) was higher in the postmenopausal women group, while the incidence of cystocele and increased urethral rotation angle was lower, with no statistically significant difference (P>0.05).

3. Discussion

Pregnancy and childbirth are independent risk factors for PFD in women, especially vaginal delivery, which can affect the pelvic floor support structure of women. Pelvic floor muscles are an important component of the pelvic floor support structure. During natural vaginal delivery, due to the pressure and extreme stretching of the fetal head on the pelvic floor muscles and their innervating nerves, changes in the morphology of the pelvic floor muscles exceed their damage threshold, resulting in myogenic and neurogenic changes in the pelvic floor muscles, This can lead to decreased pelvic floor muscle strength after childbirth. The muscle fibers of the pelvic floor muscles are divided into two types. Type I muscle fibers, also known as slow fibers, provide constant support for pelvic floor organs in a resting state; Class II muscle fibers, also known as fast fibers, mainly prevent stress reactions such as urinary incontinence or fecal incontinence when abdominal pressure increases. Therefore, when pelvic floor muscle strength decreases, long-term compression of pelvic floor muscles by abdominal and pelvic organs can lead to an increase in the area of the levator ani muscle fissure and pelvic floor organ prolapse. When pelvic floor muscles are unable to resist a sharp increase in abdominal pressure during stress reactions, it can lead to stress urinary incontinence and fecal incontinence. Two-dimensional ultrasound can observe the presence or absence of pelvic floor organ prolapse during Valsalva maneuver. In addition, the possibility of stress urinary incontinence can be evaluated by measuring indicators closely related to it, such as bladder neck movement, urethral rotation angle, and posterior bladder angle; Real-time three-dimensional ultrasound can display the coronal plane of the pelvic floor, visually observe the shape of the levator ani muscle fissure, and measure its area, anteroposterior diameter, left and right diameter, etc. It has the advantages of intuition, high resolution, and economy; Currently, pelvic floor ultrasound has achieved intelligent identification of pelvic floor structures and automatic measurement of relevant parameters. If only a few important anatomical points need to be selected, automatic measurement of relevant data can be achieved. Its advantages are that it can reduce subjective errors caused by different professional levels and human operations, and shorten measurement time. However, due to the high image quality requirements of this technology, when the image quality is poor or the shape of the levator ani muscle fissure is irregular, manual adjustment of the trace contour is required, which may require a relatively long time.

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Clinical Application of Transrectal Ultrasound Guided Prostate Biopsy

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Abstract: Objective: To analyze the clinical application of transrectal ultrasound guided prostate biopsy. Method: 100 suspected prostate cancer patients admitted to our hospital from January 2019 to January 2021 were selected and underwent transrectal ultrasound guided prostate biopsy. Based on the pathological results of the surgery, the disease detection rate (such as benign prostatic hyperplasia, prostatic intraepithelial tumor, prostate cancer, atypical adenomatous hyperplasia, etc.), visual analogue scale (VAS) scores, and Complication rate (hematuria, urinary retention, fever, vasovagal reflex, etc.), diagnostic efficacy (sensitivity, specificity, diagnostic coincidence rate, misdiagnosis rate, missed diagnosis rate, negative predictive value, positive predictive value). Result: According to the surgical and pathological results, there were 33 cases of benign prostatic hyperplasia, 11 cases of prostatic intraepithelial tumors, 7 cases of prostate cancer, and 17 cases of atypical adenomatous hyperplasia. The patients undergoing transrectal ultrasound guided prostate biopsy included 33 cases of benign prostatic hyperplasia, 11 cases of prostatic intraepithelial tumors, 7 cases of prostate cancer, and 7 cases of atypical adenomatous hyperplasia, with a disease detection rate of 98% (98/100); The patient's VAS score is (2.13 ± 0.45) points, and the incidence of complications is 3% (3/100); The sensitivity of transrectal ultrasound guided prostate biopsy was 92.50% (30/33), specificity was 90.47% (57/63), diagnostic accuracy was 94% (94/100), misdiagnosis rate was 3.17% (2/63), missed diagnosis rate was 9.09% (3/33), negative predictive value was 95% (67/70), and positive predictive value was 92.85% (26/28). Conclusion Transrectal ultrasound-guided prostate biopsy for prostate cancer has high diagnostic accuracy, low incidence of complications such as hematuria and urinary retention, light pain and high application value.

Keywords: Transrectal Ultrasound Guidance; Prostate Puncture Biopsy; Prostatic Cancer

Introduction

Prostate cancer is a common malignant tumor of the male reproductive system, which seriously threatens male reproductive health and life safety. Through research, it has been concluded that prostate puncture biopsy is the gold standard for diagnosing prostate cancer, but the diagnostic effects vary depending on the approach. Traditional systematic 6-needle biopsy cannot fully meet the diagnostic needs of the disease, with a false positive rate exceeding 30.00%. Transperineal and transrectal ultrasound guided prostate biopsy is a common surgical approach for diagnosing prostate cancer. However, some scholars believe that the physiological structure of areas such as the apex and peripheral zone of the prostate is unique, which can easily lead to missed examinations. The risk of complications varies depending on the approach. Some scholars have pointed out that transrectal ultrasound guided prostate biopsy has a low risk of complications and high diagnostic efficiency. Based on this, this study conducted transrectal ultrasound guided prostate biopsy for suspected prostate cancer patients admitted to our hospital, and explored the application effect of this biopsy technique. The report is as follows.

1. Materials and Methods

1.1 General information:

Selecting 100 suspected prostate cancer patients admitted to our hospital from January 2019 to January 2021. Inclusion criteria: (1) Patients suspected of prostate cancer through comprehensive examinations such as serum prostate specific antigen (PSA), ultrasound, magnetic resonance imaging, and rectal digital examination; (2) The patient is aware of this study and agrees to participate in the study; (3) Patients who have the first onset of prostate cancer and meet the indications for prostate biopsy; (4) PSA>10ng/ml. Exclusion criteria: (1) Patients with other malignant tumors; (2) Patients with incomplete clinical data and extremely low treatment compliance; (3) Patients with a history of abdominal and urinary system operations; (4) Patients with language and cognitive impairments. 100 patients aged 47-96 (62.63 ± 4.18) years; The volume of the prostate is 40-96ml, (72.14 ± 12.32) ml. This study has been reviewed and approved by the Medical Ethics Committee of our hospital.

1.2 Method

100 patients underwent transrectal ultrasound guided prostate biopsy. The method was to stop the use of anticoagulants 3 days before the puncture and perform intestinal cleaning 1 day before the puncture. During the puncture, the patient remains in a left lying position, holding their knees and keeping their abdomen close to their knees, causing their buttocks to approach the edge of the bed. After the anesthesia takes effect, a digital rectal examination is performed first, followed by disinfection and rinsing of the perianal and rectal area with iodine. Scan the prostate with an ultrasound probe through the rectum to ensure the puncture point and path. Then, push the 18G puncture biopsy gun to the patient's prostate capsule, press the excitation button, take the biopsy tissue, and fix it in a glass bottle containing 10% formaldehyde solution. Disinfect again and systematically puncture 12 needles at the left and right lobes of the prostate. After surgery, patients are required to drink plenty of warm water and take antibiotics to maintain unobstructed bowel movements.

1.3 Clinical Observation Indicators

With the surgical and pathological results as the gold standard, the disease detection rate (benign prostatic hyperplasia, prostatic intraepithelial neoplasia, prostate cancer, atypical adenomatous hyperplasia, etc.), visual analogue score (VAS), complication rate (hematuria, urinary retention, fever, vasovagal reflex, etc.) Diagnostic efficacy (sensitivity, specificity, diagnostic accuracy, misdiagnosis rate, missed diagnosis rate, negative predictive value, positive predictive value). VAS score: Draw a 10cm straight line on an A4 sheet of paper, divide it into 10 segments, and mark them with "0-10". Have the patient select a value to represent their own pain, with a score of 0 indicating no pain; 1-3 points for mild pain; 4-6 points for moderate pain; A score of 7-10 indicates severe pain. Diagnostic efficacy: specificity=true negative (/true negative+false positive) × 100%; Sensitivity=True Positive (/True Positive+False Negative) × 100%; Misdiagnosis rate=false negative (/true positive+false negative) × 100%; Misdiagnosis rate=false positive (/true negative+false positive) × 100%; Diagnostic coincidence rate=(true negative+true positive)/number of cases × 100%; Positive predictive value=true positive (/true positive+false positive) × 100%; Negative predictive value=true negative (/true positive+false negative) × 100%.

2. Results

2.1 Calculate the disease detection rate of patients and display it through surgical and pathological results

The surgical and pathological results showed that there were 33 cases of benign prostatic hyperplasia, 11 cases of prostatic intraepithelial tumors, 7 cases of prostate cancer, and 17 cases of atypical adenomatous hyperplasia. The patients undergoing transrectal ultrasound guided prostate biopsy included 33 cases of benign prostatic hyperplasia, 11 cases of prostatic intraepithelial tumors, 7 cases of prostate cancer, and 17 cases of atypical adenomatous hyperplasia, with a disease

detection rate of 98% (98/100).

2.2 Statistical analysis of patients' VAS scores and incidence of complications

The VAS score of 100 patients was (4.23 ± 0.64) points; The incidence of complications was 3.00% (3/100), including 1 case of fever, 1 case of urinary retention, and 1 case of hematuria.

2.3 Statistical Diagnosis Effectiveness of Patients

The disease detection rate is 98% (98/100); The patient's VAS score is (2.13 ± 0.45) points, and the incidence of complications is 3% (3/100); The sensitivity of transrectal ultrasound guided prostate biopsy was 92.50% (30/33), specificity was 90.47% (57/63), diagnostic accuracy was 94% (94/100), misdiagnosis rate was 3.17% (2/63), missed diagnosis rate was 9.09% (3/33), negative predictive value was 95% (67/70), and positive predictive value was 92.85% (26/28).

3. Discussion

Transrectal ultrasound guided prostate biopsy is the gold standard for the diagnosis of prostate cancer, with simple operation, convenient material collection, short surgical time, and minimal trauma. Transrectal biopsy is a common detection method for this procedure, and some scholars believe that this puncture biopsy method has significant advantages in terms of approach, puncture method, number of puncture needles, and complications. The data obtained from this study shows that the disease detection rate is 98% (98/100); The patient's VAS score is (2.13 ± 0.45) points, and the incidence of complications is 3% (3/100); The sensitivity of transrectal ultrasound guided prostate biopsy was 92.50% (30/33), specificity was 90.47% (57/63), diagnostic accuracy was 94% (94/100), misdiagnosis rate was 3.17% (2/63), missed diagnosis rate was 9.09% (3/33), negative predictive value was 95% (67/70), and positive predictive value was 92.85% (26/28). This indicates that transrectal ultrasound guided prostate biopsy has an ideal diagnostic effect, and the patient has mild pain that can be fully tolerated. The author believes that the approach for transrectal ultrasound guided prostate biopsy is parallel to the patient's prostate, and it does not harm the prostate and does not require excessive puncture. At the same time, the number of puncture needles for this surgery is 12, which can fully obtain the pathological changes of the lateral and apical parts of the prostate, evaluate the distribution characteristics of the lesions, and reduce the missed diagnosis rate. With ultrasound assistance, physicians can effectively obtain biopsy tissue and ensure diagnostic effectiveness. The results of this study also showed that the incidence of complications in patients was 3.00%, indicating the high safety of transrectal ultrasound guided prostate biopsy. Although transrectal ultrasound guided prostate biopsy requires passing through the rectum before entering the prostate, the puncture speed is fast, the tissue obtained is very small, and there is less damage to the prostate. Providing appropriate antibiotics before and after surgery can effectively reduce the risk of infection. This operation does not need any special treatment during the operation, and the puncture covers a wide range. It can not only collect samples from various parts in time for saturation puncture, but also avoid urinary retention, vasovagal reflex and other complications, with good safety.

4. Summary

In conclusion, transrectal ultrasound guided prostate biopsy for prostate cancer has low incidence of complications such as hematuria and urinary retention, light pain, high diagnostic accuracy and high application value.

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Observation on the Clinical Treatment Effect of Chronic Pelvic Inflammatory Disease in Obstetrics and Gynecology

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Abstract: Objective: To explore the effectiveness and related methods of clinical treatment of chronic pelvic inflammatory disease in obstetrics and gynecology. Method: An experiment was conducted on patients with chronic pelvic inflammatory disease who received treatment from a certain hospital in China from December 2021 to December 2022. Forty patients were randomly selected and divided into a control group and an experimental group, with 20 patients in each group. Among them, the control group was treated with conventional methods for chronic pelvic inflammatory disease, while the experimental group was treated with Kangfu Xiaoyan Suppository based on conventional therapy. The final total effective rate, six-month recurrence rate, and incidence of adverse reactions were compared between the two experimental groups after receiving clinical treatment. Result: After receiving treatment, the total effective rate of the experimental group was 100%, while the total effective rate of the control group was 70%. The difference between the two groups was statistically significant (P>0.05); The incidence of adverse reactions in the experimental group was 15%, while the incidence of adverse reactions in the control group was 25%. The difference between the two was statistically significant (P>0.05); The recurrence rate within six months in the experimental group was 25%, while the recurrence rate within six months in the control group was 50%. The difference between the two was statistically significant (P>0.05). Conclusion: In clinical practice, patients with chronic pelvic inflammatory disease are treated with Kangfu Xiaoyan Suppository based on routine treatment. The application of this treatment method does not cause serious adverse reactions, and can effectively alleviate the patient's condition and reduce the recurrence rate of the disease within six months. It is a particularly ideal treatment method that can fundamentally reduce the effective time of patient treatment.

Keywords: Chronic Pelvic Inflammatory Disease; Obstetrics and Gynecology; Clinical; Treatment Effect

Introduction

In clinical practice, chronic pelvic inflammation is a kind of particularly common chronic gynecological disease. The main reason for this disease is that patients' fallopian tubes will have inflammatory reactions, and there are a series of diseases such as pelvic Peritonitis and Endometritis. In the early stage of the disease, the main symptom is abdominal discomfort, and the menstrual period is abnormal. Therefore, when receiving treatment, patients often ignore the symptoms because of their mild performance, and with the extension of the course of the disease, patients will have pain in the bottom of the waist, abnormal Vaginal discharge and other symptoms, affecting the patient's quality of life. Its symptoms cannot be identified through device assisted conditions, and imaging methods are generally used for reference in clinical practice. The challenges faced in the treatment of this disease are more severe, and some drugs have more side effects. Therefore, its treatment effect needs to be improved. This article mainly analyzes the effectiveness of chronic pelvic inflammatory disease in clinical treatment of obstetrics and gynecology, using Kangfu Xiaoyan Suppository for treatment. The following is the report.

1. Experimental Data and Methods

1.1 Experimental data

Patients with chronic pelvic inflammatory disease admitted to our hospital from December 2021 to December 2022 were subjected to an experiment. Forty patients were randomly selected and divided into an experimental group and a control group, with 20 patients in each group. Among them, the experimental group had a minimum age of 22 years and a maximum age of 40 years, with an overall average age of 32 years. There were 10 unmarried and 10 married cases; The minimum age in the control group was 19 years old, and the maximum age was 38 years old. The overall average age was 31 years old, with 9 unmarried and 11 married. There was no statistically significant difference (P>0.05) in the basic data comparison of the research subjects between the two experimental groups, indicating comparability. Patients in both experimental groups signed informed consent forms, indicating that their clinical data was relatively complete.

1.2 Experimental Methods

40 patients need routine examination after entering the hospital. Patients in the control group need to implement routine treatment, use Ornidazole intravenous drip, and let patients take Fuping capsule to control the drug dosage and application times. During treatment, analyze the patient's condition, and if the patient has symptoms such as Chlamydia infection, it is necessary to administer anti Chlamydia medication. When taking medication, patients should be advised to maintain vaginal hygiene, clean with warm water, and regularly change intimate clothing. Couple life is prohibited, and a light diet is recommended. Spicy and stimulating foods should not be consumed, while ensuring a balanced diet with vitamins and proteins as the main ingredients. The experimental group patients need to receive Kangfu Xiaoyan Suppository treatment based on the basic treatment method of the control group patients, using rectal administration, one capsule per time, 1-2 times a day.

2. Results

After treatment, the total effective rates of patients in both the experimental and control groups were improved, with a total effective rate of 100% in the experimental group and 70% in the control group. The difference between the two groups was statistically significant (P>0.05); The incidence of adverse reactions in the experimental group was 15%, while the incidence of adverse reactions in the control group was 25%. The difference between the two was statistically significant (P>0.05); The recurrence rate within six months in the experimental group was 25%, while the recurrence rate within six months in the control group was 50%. The difference between the two was statistically significant (P>0.05), as shown in Table 1.

Table 1 Comparison of total effective rate, incidence of adverse reactions, and recurrence rate between two groups of patients [n (%),%]

group	Number of cases	total effective	Adverse reactions	Recurrence within 6 months
experimental group	20	20（100.00）	3（15.00）	5（25.00）
control group	20	14（70.00）	5（25.00）	10（50.00）
X^2		10.6531	0.5800	4.8511
P		0.0011	0.4463	0.0276

3. Discussion

Chronic pelvic inflammatory disease can have severe clinical manifestations. After suffering from chronic pelvic inflammatory disease, patients may experience chronic inflammation in their genitals and surrounding connective tissue. After the disease occurs, patients may experience symptoms such as increased vaginal discharge and lower abdominal pain, which limits their normal work and living conditions. In addition, with the increase of physical and mental pressure of

Chinese women at this stage, the incidence rate of the disease is constantly increasing. In clinical practice, many gynecological work also began to correctly understand the negative impact of the disease on patients and their families in terms of ideology. Symptoms can be diagnosed through various forms such as hysterosalpingography and B-ultrasound, while assisting in examinations to improve the diagnostic efficiency and quality of the disease. Adhere to the principle of "early detection and early treatment", and smoothly carry out various treatment work. The conventional treatment mode usually applies many kinds of antibiotics to patients. This treatment mode is easy to cause various adverse reactions and reduce the therapeutic effect of patients when receiving treatment. It needs to innovate its quality mode. Kangfu Xiaoyan Suppository is used based on the conventional treatment mode. There will be Taraxacum, Sophora flavescens, Patrinia scabra, etc. in this type of drugs. When administered, the drugs can play a role in promoting dampness, dissipating stagnation The efficacy of clearing heat and detoxifying. For example, when Levofloxacin is used for clinical treatment, although the synthesis and replication of bacterial DNA can be inhibited, making it disappear quickly, patients are also more likely to have abdominal pain, dizziness, etc. In this study, the hospital switched to Ornidazole, which can alleviate adverse reactions to a certain extent, but the efficacy will also be limited. From the perspective of modern pharmacology, Fukang Xiaoyan Suppository can directly act on the lesion site, promote drug release, and inhibit the growth of various bacterial strains. Further enhance the ability of patients' white blood cells to phagocytose bacteria. These drugs have a longer duration of action on the patient's body and have a certain advantage in sustained administration. Therefore, after medication, the treatment effect of patients will be better. In addition, there is a close connection between the disease and personal hygiene management. During the treatment stage, a series of health education work needs to be carried out for patients to improve their treatment compliance, enable them to maintain reasonable sexual behavior, and carry out self hygiene management. Especially after treatment, some patients may believe that they have recovered, so they completely ignore the possibility of recurrence and do not follow medical advice for sexual behavior or dietary control. Under the influence of this factor, the recurrence rate of their disease will become higher.

Conclusion

In summary, it is necessary to use conventional treatment methods and rehabilitation anti-inflammatory suppositories for patients with chronic pelvic inflammatory disease in clinical practice to further optimize the overall treatment effect, reduce the possibility of disease recurrence, and improve the quality of patient prognosis.

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Clinical Efficacy of Posterior Nasal Neurotomy in the Treatment of Allergic Rhinitis

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Abstract: Objective: To analyze the clinical efficacy of posterior nasal neurotomy in the treatment of allergic rhinitis. Method: 100 patients with allergic rhinitis who received treatment at Shaanxi Provincial People's Hospital from January 2021 to January 2022 were selected as the study subjects. According to different treatment methods, patients were divided into an experimental group and a control group. There were 50 patients in each group, of which the control group was treated with drug therapy, including nasal spray of Siqing Bio rational Sea Salt Water (twice a day), nasal Fluticasone propionate nasal spray (once a day), and oral lupatadine fumarate tablets (10mg each time, once a day). The experimental group of patients underwent posterior nasal neurotomy combined with medication for treatment. After obtaining the patient's consent, track the VAS, RQLQ, and SNOT-20 scores of the patient before treatment, 3 months after treatment, and 6 months after treatment. Observe the postoperative complications in the experimental group and investigate the occurrence of adverse reactions to drugs in both groups of patients. Results: The main effect differences between VAS, RQLQ, and SNOT-20 scoring groups and time points were statistically significant (P The RQLQ and SNOT-20 scores were lower than before treatment (P<0.05). At the same time, the scores of the experimental group compared with the control group were lower than those of the control group. The experimental group will lose their sense of smell and experience complications such as atrophic rhinitis within two weeks after surgery. During drug treatment, there was no statistically significant difference in the total incidence of adverse reactions between the two groups of drugs. Conclusion: Posterior rhinotomy can alleviate clinical symptoms and further improve the quality of life of patients with allergic rhinitis. The short-term treatment effect is good, and no serious complications have occurred.

Keywords: Allergic Rhinitis; Drug Therapy; Posterior Nasal Neurotomy; Nasal Conjunctivitis Quality of Life Scale; Nasal and Sinus Outcome Test

1. Data and Methods

1.1 General information

100 patients with allergic rhinitis who received treatment in our hospital from January 2021 to January 2022 were selected as the study subjects. According to different treatment methods, they were divided into experimental group and control group. There are 50 patients in each group, 30 males and 20 females in the experimental group. The age ranged from 23 to 41 years, with an average of (30.12 ± 3.24) years; The course of disease ranged from 1 to 7 years, with an average of (2.32 ± 1.21) years; In the control group, there were 27 males and 23 females, aged from 27 to 50 years, with an average age of (36.15 ± 5.72) years; The course of disease ranged from 1 to 8 years, with an average of (4.13 ± 2.23) years; 5 cases were

complicated with asthma. There was no significant difference between the two groups in gender, age, course of disease, and proportion of patients with asthma (P>0.05). This study was supported and approved by the hospital, and communication with the patient was completed before the experiment began. The experimental work was carried out with the consent of the patient and their family members.

1.2 Inclusion and Exclusion Criteria

Inclusion criteria: First, the patient meets the guidelines for the diagnosis and treatment of allergic rhinitis. Combined with relevant diagnostic indicators, determine whether the patient meets the requirements of the experimental study. Secondly, determine the clinical manifestation of the patient, analyze the patient's clinical situation, and determine whether they have nasal itching, sneezing, nasal secretion hyperactivity, and nasal mucosal swelling. Third, the patient was determined to have allergic rhinitis, and the condition continued to develop. The patient received surgical treatment for the first time. Fourth, the relevant preparation materials are complete, and the patient has signed an informed consent form. The patient does not have any other major diseases.

Exclusion criteria: First, the patient's physical condition is poor and cannot withstand posterior nasal neurotomy. Secondly, people with drug allergies or other diseases cannot participate in this study. Third, patients with severe lesions in the lungs and kidneys cannot participate in the study. Finally, analyze the patient's disease history, such as the inability of patients with psychiatric disorders to participate in the study.

1.3 Method

Control group: the patients in the control group were given drug treatment in the way of nasal spray of Siqing Biological Sea Salt Water (twice a day), Fluticasone Propionate Nasal Spray (once a day), and Lupatadine Fumarate Tablets (10mg each time, once a day). The patient can stop taking the medication after one month, but it is necessary to determine whether to continue taking the medication based on the patient's later symptoms. The judgment standard is the patient's actual tolerance to determine whether to continue taking the medication.

Study group: The patient received posterior nasal neurotomy combined with drug treatment. The patient was placed in a supine position. Before the surgery, general anesthesia was administered to the patient, and routine intubation was performed. The nasal mucosa was constricted with 1: 1000 adrenaline saline. A longitudinal incision was made under nasal endoscope at about 0.5 cm in front of the tail of the middle turbinate, exposing the ethmoidal crest of the palatine bone, and the ethmoidal crest was removed with bone rongeurs. At this time, the neurovascular bundle separated from the sphenoid foramen was visible, During surgery, special attention should be paid to avoid damaging blood vessels and causing bleeding. Then, the posterior nasal nerve, sphenoid mandibular artery, and their branches were separated using a micro hook needle, and the posterior nasal nerve was resected. After sufficient hemostasis of the operative cavity with a medical cotton ball, the middle nasal canal mucosal flap was repositioned. The middle nasal canal was filled with an expanded sponge, and antibiotics were injected intravenously for 1-2 days after surgery. After 3 days, the sponge was removed. Two weeks after surgery, the drug treatment method was the same as that of the control group.

1.4 Observation indicators

① VAS was used to assess the severity of nasal symptoms before treatment, 3 months after treatment, and 6 months after treatment, with a total score of 10 points. The higher the score, the more severe the symptoms RQLQ was used to assess the quality of life of patients before treatment, 3 months after treatment, and 6 months after treatment, including 7 items: nasal symptoms, eye symptoms, non nasal eye symptoms, activity limitations, emotional disorders, actual difficulties, and sleep disorders. Each item was scored 0 to 6 points, and the higher the score, the lower the quality of life SNOT-20 was used to assess the improvement of symptoms in patients before, 3 months after treatment, and 6 months after treatment, including 4 items of nasal symptoms, related symptoms, emotional outcomes, and sleep disorders. There were 20 items, with

each item scoring 0 to 4 points, with a total score of 80 points. The higher the score, the more severe the symptoms The incidence of postoperative olfactory loss, atrophic rhinitis, and cerebrospinal fluid rhinorrhea in the study group was recorded; Observe and compare the occurrence of adverse reactions (dizziness, dry pharyngitis, fatigue, dry nose and throat) during drug treatment between the two groups of patients.

2. Results

2.1 Comparison of VAS scores between two groups of patients

The main effect difference between VAS score groups and time points was statistically significant ($P<0.01$), and there was an interaction between groups and time points ($P<0.01$); Before treatment, there was no statistically significant difference in VAS scores between the two groups ($P>0.05$). After 3 and 6 months of treatment, the VAS scores of the two groups were lower than before treatment ($P<0.05$), and the study was lower than the control group ($P<0.05$).

2.2 Comparison of RQLQ scores between two groups of patients

The main effect difference between the RQLQ score groups and time points was statistically significant ($P<0.05$ or $P<0.01$), and there was no interaction between the groups and time points ($P>0.05$); Before treatment, there was no statistically significant difference in RQLQ scores between the two groups ($P>0.05$); After 3 and 6 months of treatment, the RQLQ scores in both groups were lower than those before treatment ($P<0.05$), and the study group was lower than the control group ($P<0.05$).

2.3 Comparison of SNOT-20 scores between two groups of patients

The main effect difference between SNOT-20 score groups and time points was statistically significant ($P<0.01$), and there was an interaction between groups and time points ($P<0.05$); Before treatment, there was no statistically significant difference in SNOT-20 scores between the two groups ($P>0.05$); After 3 and 6 months of treatment, the SNOT-20 scores in both groups were lower than those before treatment ($P<0.05$), and the study group was lower than the control group ($P<0.05$).

3. Discussion

The RQLQ score of patients 3 and 6 months after surgery was only (0.9 ± 0.3) points, confirming that posterior nasal neurotomy can effectively improve the clinical symptoms and improve the quality of life of patients with allergic rhinitis. Some scholars have also found that the overall effective rate of highly selective nasal neurotomy under nasal endoscope for the treatment of moderate to severe allergic rhinitis within 3 months after surgery is 100.0% (50/50), and the overall effective rate after 2 years of follow-up is 96% (48/50), indicating that the clinical efficacy of posterior nasal neurotomy for allergic rhinitis is good. The results of this study showed that the VAS, RQLQ, and SNOT-20 scores in the study group were lower than those in the control group 3 and 6 months after surgery. Similar to the above research results, it again confirmed that posterior nasal neurotomy can effectively alleviate the clinical symptoms of patients with allergic rhinitis, and the effect is superior to conventional drug conservative treatment.

4. Summary

In summary, posterior nasal nerve blockade can significantly alleviate the clinical symptoms of patients with allergic rhinitis. With the continuous improvement of technical level, the short-term efficacy is more accurate. It greatly improves the quality of life of patients. Comparing the risk of complications after treatment with patients' illness, there are still some problems with this technology, and further exploration is needed for long-term efficacy.

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Summary of Professor Wang Xiaoyan's Experience in Treating Insomnia

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Abstract: Professor Wang Xiaoyan applied the theory of "monism of qi" in traditional Chinese medicine to study insomnia, and believed that insomnia was caused by a variety of pathogenic factors, which affected the normal rise and fall of qi in various organs of the human body, and eventually led to the rise of yang, which could not be submerged. Yang did not enter into yin, but became sleepless. By "supporting yang", the yang returned to its place, and this group of vitality moved slowly and orderly in the human body, and yin and yang combined to sleep peacefully.

Keywords: Insomnia; Yang Qi; Monism

1. Introduction

Insomnia is a condition caused by various reasons that prevents normal sleep, mainly manifested as insufficient sleep time, depth, and quality, such as difficulty falling asleep, sleeping lightly and waking easily, and excessive dreaming. It is equivalent to insomnia in Western medicine. Long term insomnia patients may be combined with depression, anxiety, and trigger cardiovascular and cerebrovascular diseases [1], affecting normal work and life. Traditional Chinese medicine believes that the overall pathogenesis of insomnia is the loss of communication between yin and yang, and the inability of yang to enter yin. Professor Wang Xiaoyan, based on the theory of monism of qi, proposed that insomnia should be treated by "supporting yang", and attention should be paid to protecting yang qi in clinical medication. She did not use a large number of calming heart and calming nerves herbs, which is as effective as a drum for insomnia. Professor Wang believes that the vitality of human beings is mainly based on Yang, and through "supporting Yang" to restore the circular movement of the human body and the unity of Qi, Yang should be hidden while Yang enters Yin. Water, fire, Yin, and Yang work together to sleep peacefully.

Wang Xiaoyan, a professor at Shaanxi University of Traditional Chinese Medicine, master's supervisor, vice president of Xi'an Traditional Chinese Medicine Hospital, academic leader and chief physician of the Department of Encephalopathy, is a renowned traditional Chinese medicine practitioner in Shaanxi Province and the first renowned traditional Chinese medicine practitioner in Xi'an. She has been engaged in clinical work for more than 30 years and is skilled in treating various brain diseases and internal injuries.

2. Theory

2.1 Monism of qi

The "monism of qi" is a theory that explains the generation and nature of the universe from the original qi, which belongs to the category of ancient philosophy. According to the monism of qi, all substances in the world are different forms of qi, and all phenomena in the world originate from the movement and change of qi. The main content of vitality is the movement of the Qi machine, which means ascending and descending in and out. The Inner Canon states, "If one enters or

exits, the divine mechanism will be transformed and destroyed, and if one raises or lowers interest rates, the qi will stand in isolation and danger. Therefore, without entering or exiting, there is no way to generate, grow, strengthen, old, or already, and without ascending or descending, there is no way to generate, grow, transform, collect, or hide.

In Peng Ziyi's "Ancient Chinese Medicine of Circular Movement", it is recorded that: The masculine gender rises directly, while the feminine gender falls directly. Yin and Yang intersect, generating love and following each other, forming a circular motion. The masculine gender moves, while the feminine gender remains static. Quietness sinks, and movement floats. From stillness to movement, it rises, and from movement to stillness, it falls. A cycle of ups and downs generates qi. Qi is also the life of living beings. The origin of this atmospheric circular motion is that humans are born with the energy of the circular motion of heaven and earth, so the human body is said to be a small universe. People are born with the energy of the circular motion of heaven and earth, The ascending and descending method of the human body's qi mechanism is based on nature. The movement of the qi mechanism is circular, and a group of elemental qi undergoes ascending, descending, floating, and sinking changes in the human body. Through gasification, it generates the qi of the five organs. The floating qi is for the heart qi, the sinking qi is for the kidney qi, the left ascending qi is for the liver qi, the right descending qi is for the lung qi, and the qi of the spleen and stomach is located in the middle of the jiao and sends forth the four dimensions. It is the hub for the ascending and descending of the heart, liver, lungs, and kidneys. Therefore, Li Ke said, "Six Qi is the realization of one Qi.

2.2 Fuyang

Professor Wang believes that the establishment of a person's destiny lies in using fire to establish the extreme, and the legislation for treating diseases lies in using fire to eliminate yin. If the disease is in Yang, support Yang and suppress Yin; if the disease is in Yin, use Yang to transform Yin. Li Ke proposed that "a small amount of true yang in the Kan is the foundation of human life." He believed that the origin of life is the Kan hexagram formed by the combination of the innate Qiankun hexagrams, which is a mixture of innate kidney qi and acquired stomach qi. Human vitality is reflected by yang qi. Water and fire are the paths of yin and yang. Professor Wang bases her syndrome differentiation on yin and yang in clinical practice, believing that the symptoms of diseases often manifest as cold and heat. Cold and heat are external phenomena, while yin and yang are the essence; Cold and heat are symptoms, while yin and yang are pathogenesis. In the theory of combining yin and yang, yang is the main body. The ideological roots also come from Zhongjing: cold damages yang as the root of the disease, heat is the transformation of cold, so the treatment should support yang. Fuyang is not just the use of warm yang herbs such as aconite, dried ginger, and cinnamon. As long as it can return the yang qi to its roots, the source of life, and the place of yang root, it is Fuyang, which is Li Ke's proposition that "Fuyang is the truth, and the eight methods cannot be abolished".

3. Etiology, pathogenesis, and medication characteristics

3.1 Three Yin Cold Dampness Syndrome

Cold and dampness fill the triple energizer, with insufficient Yang Qi as a supplement. The haze of cold and dampness steals the position of Yang, and Yang does not enter Yin. It can be vividly likened to "water cold, dragon fire flying". The symptoms of this syndrome are often manifested as difficulty falling asleep, inability to fall asleep within 30 minutes after taking common benzodiazepine drugs, poor mental health, dizziness, good appetite, preference for spicy and spicy foods, irregular bowel movements, frequent urination, pale or dull tongue, thin white or yellow or cloudy fur, shallow lines on the tongue surface, and solid and stagnant veins. Represented by Wen's Benfu Tang.

3.2 Upper syndrome of nail gallbladder inversion

Jueyin subsides, armor and gallbladder reverse, phase fire is detached, Yong blocks the south, evil heat disturbs the heart, or Jueyin transforms too much into fire heat, causing insomnia. At this point, seize the main contradiction of the abnormality of the Shaoyang Cardinal to restore the "less fire vitality" that the Shaoyang Cardinal should have. This

syndrome is often characterized by difficulty falling asleep, excessive dreaming, irritable and irritable temperament, bloating and tightness in the chest and ribs, liking too much rest, bitter mouth and dry throat, dry stool, yellow urine, red tongue, yellow fur, and a few pulse strings. Prescription selection: Shaoyao Gancao Tang combined with Chaihu type formula with addition or subtraction.

3.3 Deficiency Fire Inflammation Syndrome

Kidney water deficiency, yin not converging yang, fire losing its restraint, the fire running up and floating outside, disturbing the mind and causing insomnia. The ancient image referred to it as shallow water without nourishing the dragon. This syndrome is often characterized by difficulty falling asleep, shallow sleep and early awakening, restlessness in the heart, dizziness and tinnitus, susceptibility to sores in the mouth and tongue, swelling, pain and bleeding in the gums, and dry stools. The tongue is red with little moss, and the veins are fine. By adding and subtracting the fire igniting soup, one can ignite the fire and return to the original state. Modern pharmacological studies have proved that both Poria cocos and prepared rehmannia root have sedative and inhibitory effects on the cerebral cortex of the central nervous system [2]. All the directions play together to ignite the fire and return to the original state.

3.4 Syndrome of Yang Ming Not Descending

The spleen and stomach are the key points for the rise and fall of qi. The stomach belongs to the Yang Ming, and descending is the order. If Yang Ming does not descend, all qi will be reversed. Therefore, the Wei Qi cannot enter Yin from Yang and cause sleep disorders. The "Interpretation of Su Wen" [3] also mentions that "Yang Ming is the stomach pulse, and the stomach is the sea of the six internal organs. Its qi also goes down, and Yang Ming cannot follow its path, so it cannot lie down." The main symptoms are: difficulty falling asleep, accompanied by chest tightness, abdominal distension, hiccup, belching, acid reflux and heartburn, less hunger and poor appetite.Prescription of Banxia Xiexin Tang with added or subtracted ingredients.

4. Conclusion

With the increasing pressure of modern life, work, and study, as well as the influence of lifestyle, diet, and other factors, insomnia is one of the common clinical symptoms. Professor Wang has been engaged in the clinical practice of traditional Chinese medicine and western medicine for many years, and believes that insomnia is related to the disorder of the circulation of one qi in the human body. Combining yuan's movement thought of Peng Zi, She uses the monism of qi, through "supporting the yang", to make the yang enter the yin, and restore the normal function of day essence and night sleep of the human body.

Professor Wang's treatment of insomnia has always focused on the circulation of Qi, which refers to the circulation of Qi ascending and descending in a circular and endless state[4]. If the idea of monism of qi can be properly applied to restore the circulation of qi and return yang qi, insomnia can be effective. Finally, doctors still need to consider factors such as endowment, solar term, and region in order to improve the efficacy of treating insomnia.

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A Case Report of Ovarian Carcinoid Complicated with Mucinous Cystadenoma and Review of Relevant Literature

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Abstract: Ovarian mucinous cystadenoma is a common tumor of the female reproductive organs, but ovarian carcinoid is very rare, accounting for about 0.1% of all ovarian tumors [1]. A case of ovarian carcinoid complicated with mucinous cystadenoma was reported. The clinical manifestations, histological features, diagnosis, treatment and prognosis were discussed.

Keywords: Ovarian Carcinoid; Carcinoid Syndrome; Mucinous Cystadenoma

1. Case report

The patient is a 45-year-old female. Admitted to hospital because of "heavy menstruation with progressive dysmenorrhea for two years". The ultrasound showed cystic mass in the bilateral adnexal area (about 4.6x3.3cm on the left and 7.6x4.8x7.1cm on the right). During the operation, the specimen was examined and resectomized. A small nodular tissue was found inside the left ovarian cyst, while the right ovarian cyst was a cyst with smooth cyst wall and no protrusion was found. Left ovarian neoplastic lesions, the final results to be confirmed by paraffin wax routine extensive sampling and immunohistochemistry. Postoperative examination: 1. (left) ovarian carcinoid complicated with mucinous cystadenoma; Immunohistochemistry showed carcinoid components (214610-2#) : PCK (+), CK7 (+), CK20 (-), the vera.ttf - 1 (+), Tg (+), CgA (+) oven, Syn (+), CD56 (+), Caretenin (-), inhibin (-), PAX - 8 + (part), Ki - 67 (LI: 3%), PAS staining mucous. 2. (Right) serous cystadenoma of ovary.

2. Discussion

Carcinoids are neuroendocrine tumors with specific histological, biological, and clinical features. Although they are most commonly found in the gastrointestinal and bronchopulmonary systems, a significant proportion of these tumors can occur in less common anatomical localisation, which can result in tumors remaining undetected until they have metastasized or exhibit secretory activity [2]. Ovarian carcinoid is a very rare tumor, only 5% of carcinoids are of ovarian origin [3]. Due to its low incidence, there is little literature on case reports or describing primary ovarian carcinoid.

Clinical Features of ovarian carcinoid Among reported cases of ovarian carcinoid, patients ranged in age from 31 to 83 years old, but most patients were postmenopausal or perimenopausal [4]. The incidence of ovarian carcinoid is mostly unilateral, some of them are solid masses, or they are often combined with benign teratoma or mucinous tumor. Some people believe that the clinical symptoms of carcinoid cancer are related to the size of the tumor [3]. Most of the patients had no obvious symptoms, and a few had abdominal discomfort or abdominal pain due to large tumor growth and pelvic cavity pressure.

Histopathological features of carcinoid Primary ovarian carcinoid can be divided into four types: island-like, trabecular, mucous and stromal (trabecular carcinoid mixed with thyroid tissue) [9]. ① The most common is the island type, which is characterized by small acinar and polygonal cell nests with round or oval nuclei and uniform chromatin distribution. ②

Trabecular type is rare, and the cells are arranged in trabeculae or bands [10]. (3) The mucinous type, also known as adenoid or goblet cell adenocarcinoma, is morphically similar to the goblet cell adenocarcinoma of the appendix. The glands are dense or sieve, nest or sheet, may be accompanied by necrosis and goiter, and the mucous component may be malignant and contain signet ring cells. The stromal type consists of different proportions of carcinoid components and goiter components, among which carcinoid components are mostly banded or trabecular. Ovarian carcinoids, like other neuroendocrine tumors, also express one or more neuroendocrine markers: chromogranin, synaptophysin, or CD56 [9].

Diagnosis of ovarian carcinoid Several imaging techniques such as ultrasound, CT, magnetic resonance imaging (MRI) and methoxyguanidine can be used to diagnose carcinoid. Other imaging techniques, such as positron emission tomography (pet), can also be of great help in determining the stage of the disease, discovering hidden tumors, and determining treatment options [12]. However, the imaging findings of ovarian tumors are not well described in the literature reported so far. Preoperative diagnosis of ovarian carcinoid is difficult due to its low incidence and lack of typical clinical manifestations and sensitive test methods. As ovarian carcinoid tumors are solid tumors, there is no significant difference between them and solid primary ovarian cancer or metastatic tumors in imaging [13]. At present, the diagnosis is mainly determined by postoperative pathological examination, and no definitive preoperative diagnosis has been reported in the existing literature. To date, there is no consensus on the formal staging of ovarian carcinoid cancer, instead the International Federation of Obstetrics and Gynecology (FIGO) ovarian cancer staging is used [14-15].

Treatment of ovarian carcinoid Most ovarian carcinoids are localized to the ovaries and are at an early stage, and can usually be cured by surgical removal alone. The standard treatment for primary ovarian carcinoid cancer is to remove it completely by oophorectomy or salpingo-oophorectomy. Adjuvant chemotherapy or radiotherapy is not usually recommended or required. Primary ovarian carcinoid has a low degree of malignancy and is generally considered a benign disease if it is confined to one ovary. The 10-year survival rate is close to 100%. For advanced patients, the 5-year survival rate is close to 33% [3]. Unlike primary carcinoids, metastatic carcinoids are more aggressive, with 1/3 of patients dying within 1 year of initial diagnosis and 3/4 dying within 5 years [4]. Therefore, it is of great significance to distinguish metastatic carcinoid from primary carcinoid. Metastatic carcinoid is mostly bilateral, while primary ovarian carcinoid is usually unilateral [3]. Macroscopically, metastatic carcinoid consists of tumor nodules, while primary ovarian carcinoid forms a single homogeneous mass, and the presence of other teratoma elements associated with ovarian carcinoid confirms that it is ovarian primary. Although island-like carcinoids of the ovary are considered malignant, they grow slowly and are rarely associated with metastasis, which in at least 90% of cases presents as extra-ovarian disease [4]. For patients with abdominal recurrence after initial surgery, there is a lack of strong evidence related to treatment due to the small number of cases reported in the existing literature.

Prognosis of ovarian carcinoid In patients with carcinoid, the appearance of carcinoid syndrome is associated with length of survival. The median survival time of patients is 3.5-8.5 years [19]. In two different studies, the 5-year survival rate after symptom onset was 30% and 67%, respectively . Obviously, the prognosis of patients with carcinoid cancer varies greatly. Ki-67, based on the proliferation rate of tumor cells, is now routinely used as a grading system for neuroendocrine tumors, and is widely considered to be a marker of tumor aggressiveness and can be used to predict the prognostic behavior of tumor biology. Therefore, more research is needed on clinical and molecular predictors that affect patient prognosis.

3. Conclusion

To sum up, great progress has been made in the treatment of ovarian carcinoid in the past decades, but there is no effective treatment for ovarian carcinoid with distant metastasis and metastatic carcinoid, and there is no reliable preoperative diagnosis method for ovarian carcinoid in clinical practice. Carcinoid cancer is relatively rare, so more and better clinical screening indicators, biological and imaging indicators are needed to monitor all stages of the disease, so as to achieve early detection, early diagnosis and treatment as possible.

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Clinical Effect of Endoscopic Sinus Surgery on Fungal Sinusitis

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Abstract: Objective: To investigate the clinical effect of endoscopic sinus surgery on fungal sinusitis. Methods: 100 patients who came to our hospital for treatment from January 2019 to January 2022 were selected as the study subjects. The patients were divided into two groups using a random number table method, with 50 patients in each group. They were the experimental group and the control group. Patients in the control group can be treated with traditional Caldwell Luc surgery. The experimental group was treated with endoscopic sinus surgery. The total effective rate, specific airway resistance, olfactory function, incidence of postoperative infection, and recurrence rate of the two groups were compared. Results: The total effective rate of surgery in the experimental group reached 98%. Compared with the control group, the total effective rate of surgery was 78%. The difference was statistically significant (P<0.05). There was no statistically significant difference between the postoperative infection rate (2.53% vs 8.57%) and recurrence rate (2.86% vs 5.71%) between the two groups (P>0.05). Conclusion The treatment of fungal sinusitis with endoscopic sinus surgery is effective, which can significantly reduce nasal airway resistance, improve patients' olfactory function, and reduce postoperative infection and recurrence.

Keywords: Endoscopic Sinus Surgery; Fungal Sinusitis; Olfactory Function; Recurrence Rate

1. Introduction

1.1 General information

100 patients with fungal sinusitis admitted to our hospital were selected as the study subjects. Divide into two groups by random number table method, with 50 cases in each group. In the control group, there were 26 males and 24 females; Age: 22-68 years old, with an average age of (44.19 ± 7.48) years; The course of disease ranged from 1 to 15 years, with an average of (5.47 ± 2.14) years; Location of lesion: 18 cases were located on the left side, and 32 cases were located on the right side. In the experimental group, there were 31 males and 19 females; The age ranged from 24 to 67 years, with an average of (45.13 ± 2.34) years; The course of disease is 1-14 years, (7.71 ± 2.08) years; Location of lesion: 30 cases were located on the left, and 20 cases were located on the right. There was no statistically significant difference between the two groups in the course of disease, lesion location, and other data (P>0.05), which was comparable. And this study has been approved by the Medical Ethics Committee.

1.2 Inclusion and Exclusion Criteria

1.2.1 Inclusion criteria

(1) The chief complaint is unilateral nasal congestion, nasal discharge, orbital pain, or ophthalmoplegia; (2) The diagnosis was made after comprehensive diagnosis such as nasal examination and CT scan, and it conforms to the relevant

judgment basis in "Diagnosis and Treatment of Allergic Fungal Nasosinusitis"; (3) The patient is aware of the study content, and the patient's family agrees to abide by medical arrangements, and has signed the relevant consent agreement.

1.2.2 Exclusion criteria

(1) The patient has severe visceral and tissue diseases; (2) Patients with malignant tumors; (3) The patient has a history of nasal surgery; (4) The patient suffers from serious mental illness or intellectual abnormality; (5) Those who are unable to cooperate with the research therapy throughout the process.

1.3 Method

1.3.1 Control group

Patients in the control group were treated with traditional Caldwell Luc surgery. After routine disinfection and general anesthesia, the incision was positioned at the mucosa of the labial gingival sulcus, the periosteum of the anterior maxillary wall was separated, and the anterior maxillary sinus wall was fully exposed. At the cuspid fossa location, a window was drilled with an electric drill to expand the bone opening, and fungal masses in the surgical field were thoroughly removed. Then, 3% hydrogen peroxide and physiological saline were used to rinse the sinus cavity. After the stoma on the inner wall of the maxillary sinus was unobstructed, the water bag was filled into the maxillary sinus cavity through the lower nasal canal. After 48 hours, the water bag was removed, Sinus irrigation was given three days after surgery, and antibiotics were continuously used to prevent infection for 5 days.

1.3.2 Experimental group

Patients were treated with endoscopic sinus surgery. After routine disinfection and general anesthesia, the sulcus process is resected under endoscope. Depending on the extent of the lesion, the drainage opening of the affected sinuses is expanded or the sinuses are resected. Some patients are assisted with fenestration of the lower nasal tract to thoroughly remove fungal masses from the affected sinuses. During the operation, the mucus membrane of the sinuses is protected as much as possible. Then, anatomical variations that interfere with the ventilation and drainage of the ostiomeatal complex are treated. Polyps are removed if there is polyp. For nasal septum deviation "The anatomical variation of the middle turbinate was corrected. After completion, the sinus cavity was thoroughly rinsed with 3% hydrogen peroxide and physiological saline. Finally, a high molecular hemostatic cotton was taken and tamped for 48 hours. On the third day after surgery, with the assistance of nasal endoscope, the scab in the operative cavity was cleaned on time, and glucocorticoid was administered for nasal spray. Antibiotics were used to prevent infection for 5 days.".

1.4 Observation indicators

(1) Surgical efficacy: The proposed basis is selected according to the relevant standards of Haikou in 1997 [5]. The evaluation criteria for the efficacy of endoscopic sinus surgery are as follows: ① Significant effect: no related symptoms or purulent secretions, normal opening of the ostium, and epithelialization of the sinus mucosa Effective: Relevant symptoms have improved and purulent secretions have decreased, but there are still certain edema, hypertrophy, or new granulation growth in the sinus mucosa; ③ Ineffective: basically no symptom changes, there is purulent secretion, and there are polyps, adhesion of the surgical cavity, and small obstruction of the ostium. The evaluation criteria for the efficacy of traditional Caldwell Luc surgery are as follows: ① Significant effect: no related symptoms and purulent secretion, and the stoma is unobstructed; ② Effective: Relevant symptoms have improved, and the amount of purulent secretion is low; ③ Ineffective: basically no symptoms change, a large amount of purulent secretion, and stoma closure. Total effective rate=(number of significantly effective cases+number of effective cases)/34 × 100.00%。

(2) Nasal airway resistance (NAR): Before and 1, 3, and 6 weeks after surgery, it was measured using a forearm manometer (Mastr-PF-10 type in the United States). The higher the manometer value, the greater the NAR value and the more obvious the ventilation barrier.

(3) Olfactory function: Before and 1, 3, and 6 weeks after surgery, it was measured by olfactometer quantitative examination method [6]. A total of 8 concentrations (fecal odor, fruity aroma, spoilage, scorched taste, and floral aroma) were set, and the lowest threshold values of the nostrils on both sides of the patient were measured from low to high concentrations. A score of 0 to 1.0, 1.1 to 2.5, 2.6 to 4.0, 4.1 to 5.4, and 5.4 in turn indicated normal, slightly damaged, moderately damaged, severely damaged, and completely lost olfaction.

(4) Postoperative infection and recurrence: Count the number and incidence of postoperative infection in both groups, and follow up for 3-6 months to record the recurrence of patients.

2. Discussion

Fungi are a widely occurring pathogenic bacteria in nature. Under normal circumstances, the amount in the surface layer of the human nasal mucosa is relatively stable, and there will be no pathogenic problems. However, after the microenvironment in the nasal cavity and sinuses is destroyed, various fungi are prone to reproduce in large numbers and invade the tissues, ultimately inducing fungal sinusitis. Due to the existence of fungi, the internal structure of the nasal cavity is more complex, and various factors are involved. Considering the actual environmental factors, climate change, drug factors, and low immune function, in addition, middle turbinate stenosis, retention of sinus secretions, etc. are also common causes of chronic fungal sinusitis. In terms of treatment, the most effective and thorough treatment for fungal sinusitis is surgical surgery. Although traditional Caldwell Luc surgery can completely remove the diseased tissue, its treatment effect on the maxillary sinus ostium is limited, and there are problems such as significant trauma and slow postoperative recovery, which has a significant impact on the recovery of the physiological function of the sinus mucosa after surgery. Nasal endoscopic sinus surgery is a new surgery developed based on nasal endoscopy. Compared with traditional surgery, it has many advantages, such as small trauma, significant curative effect, rapid recovery, high safety, and low postoperative recurrence rate. It can more thoroughly remove the diseased tissue in the nasal sinus and reduce postoperative recurrence, while minimizing damage to the mucosal function of the nasal sinus.

Safety and recurrence rate are another important indicator of surgical efficacy. This study found that the incidence and recurrence rate of postoperative infection in the two groups of patients are relatively similar, suggesting that both of these two surgical methods for the treatment of fungal sinusitis can better ensure surgical safety and prevent postoperative recurrence; The reason why these two data in the observation group have a slight advantage over those in the control group may be related to the fact that endoscopic surgery can more thoroughly remove the diseased tissue and reduce the residual diseased tissue. Its less trauma and less stress response to patients may reduce the risk of postoperative infection to a certain extent.

3. Summary

In summary, endoscopic sinus surgery is used for the treatment of patients with fungal sinusitis. Compared to traditional surgical methods, this method can better reduce nasal airway resistance, accelerate the recovery of patients' olfactory function, and also have a certain role in preventing postoperative infection and reducing recurrence.

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Construction of a Risk Prediction Model for Postpartum Stress Urinary Incontinence Based on Machine Learning

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Abstract: Pregnancy pregnancy and childbirth is one of the main causes of Stress Urinary Incontinence (SUI). SUI not only affects women's physical health, but also affects women's mental health. 48 puerperae with SUI 6-8 weeks postpartum and 118 puerperae without urinary incontinence during the same period were selected in a hospital in eastern China. Patient information was retrieved from medical records, and postpartum women were asked to complete the International Urinary Incontinence Counseling Questionnaire Short Form (ICI-Q-SF). The early prediction model of SUI was constructed based on the random forest ensemble learning method. Compared with the results of the traditional logistic regression model, the random forest model has better prediction performance and can be used as a screening tool for high-risk groups of SUI during pregnancy to guide clinical work.

1. Introduction

Stress urinary incontinence (SUI) is complaint of involuntary loss of urine on effort or physical exertion,or on sneezing or coughing[1]. The pathophysiological causes of stress urinary incontinence are complex, factors known to be associated with a greater risk of postpartum urinary incontinence are pregnancy and childbirth[2]. The prevalence of SUI in female urinary incontinence patients ranges from 25%-45%.The reported prevalence of urinary incontinence in the postpartum period ranges from 30 to 40%[3-4]. SUI not only affects women's physical health seriously, but in severe cases can lead to women's psychological health, including anxiety, depression，loss of self-confidence and other emotions[5].

Studies have shown that pelvic floor muscle training can reduce the incidence of postpartum urinary incontinence in women [6], and greatly improve women's quality of life. Therefore, early identification, diagnosis and intervention of postpartum urinary incontinence can reduce the incidence of postpartum urinary incontinence in women. Fu Wenying et al[7-8] used ROC curve combined with multivariate Logistic regression analysis to construct a postpartum SUI risk prediction model. However, this model needs to be highly dependent on the correct data, and the accuracy of the model is not high. The purpose of this study was to find a new method to accurately identify high-risk groups of postpartum urinary incontinence.

2. Materials and Methods

2.1 Study subject

A total of 48 patients with SUI were collected from January 2021 to May 2021 in Hangzhou maternity hospital for prenatal examination, pregnancy, and delivery, and returned to the hospital for follow-up 6-8 weeks after delivery. The same method was used to select 118 patients without SUI during the same period. as a control group. Inclusion criteria for women with SUI: ① Meet the diagnostic criteria for SUI by the International Continence Society; ② Full-term singleton delivery;

③ Willing to participate in this study; ④ No previous urinary tract infection and kidney disease; ⑤ No history of pelvic surgery; ⑥ Clear consciousness, no complaints of cognitive impairment, and normal overall cognitive function. ⑦ 6 to 8 weeks postpartum re-examination and fill in the International Urinary Incontinence Advisory Committee Urinary Incontinence Questionnaire (ICQI-SF). In the control group, women without SUI should meet the above inclusion criteria except ①. Exclusion criteria: ① patients with irregular obstetric examination; ② patients with visual or hearing impairment; ③ patients with other factors that may lead to voiding disorders (neurogenic bladder, myelopathy, traumatic stenosis of lower urinary tract, diabetes insipidus, etc.) excluded; ④ patients with Obvious physiological defects and major diseases, such as severe cardiovascular and cerebrovascular diseases, nervous system diseases, and motor organ diseases. All maternal age, gravidity, parity, pre-pregnancy BMI, increased BMI during pregnancy, mode of delivery, painless delivery, fetal weight and other data were collected from medical records, and the risk factors of postpartum SUI were analyzed after sorting and summary.

2.2 Definition

SUI is defined as the involuntary leakage of urine that occurs due to increased abdominal pressure associated with pregnancy and childbirth.Postpartum period is defined as 6-8 weeks after delivery in this article.

2.3 Ethics

In this study, all procedures involving human participants were in compliance with the Declaration of Helsinki (revised 2013). This study was approved by the Ethics Committee of Hangzhou maternity hospital.

2.4 Model building and analysis

In this study, an early prediction model of SUI was constructed based on the random forest method. Random forest is an ensemble learning method based on the idea of bagging. It has the characteristics of high precision and strong generalization ability, and is widely used in the field of auxiliary diagnosis of obstetric diseases [9].

The grid search method (GridsearchCV) was used to adjust the optimal parameters of the random forest model. In this study, SPSS22.0 statistical software was used for data analysis, and the random forest and logistic algorithms were established and verified based on python.

The performance of the prediction model was evaluated by the area under the curve (AUC) of the ROC curve, sensitivity, specificity and F1 score under 5-fold cross-validation.

3. Result and Discussion

3.1 Data Baseline Description

Age, gravidity, parity, pre-pregnancy BMI, increased BMI during pregnancy, mode of delivery, painless delivery, birth weight and other data were collected. The basic characteristics of puerperae are shown in Table 1.Receiver operating characteristic curves are shown in Figure 1.

Table 1.General characteristic of the study population(n=166)

Characteristics	Mean±SD
Age,years	30.57±3.85
Gravidity,number of times	2.02±1.18
Parity,number of times	1.37±0.51
Pre-pregnancy BMI,kg/m2	20.78±3.24
Increased BMI,kg/m2	5.22±2.05
Birth weight,g	3347.53±411.53
Delivery mode	

Vaginal delivery[n %]	130(78.3)
Cesarean section[n %]	36(21.7)
Epidural anesthesia[n %]	68(51.5)

3.2 Results

The experimental results of cross-validation are shown in Table 2. The random forest model has the best predictive ability, and the AUC, F1 and sensitivity are significantly better than the traditional logistic regression model. The specificity is 0.44, the sensitivity is 0.92, and the F1 value is 0.60, which is significantly better than the other four methods.The results are shown in Table 2.

Table 2. Prediction average results of different methods after 5-fold CV

Modle	Specificity	Sensitivity	F1	ROC
Logistics	0.45	0.75	0.55	0.65
Machine learning	0.44	0.92	0.60	0.78

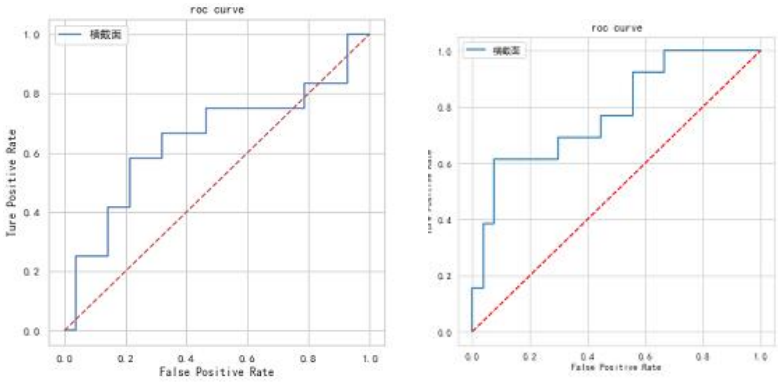
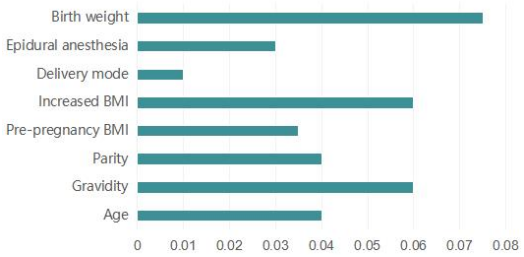


Figure 1.Receiver operating characteristic curves

3.3 Feature Importance Analysis

Predictive models are clinically significant and can be used for postpartum as well as prenatal assessments. This study included maternal age, parity, pre-pregnancy BMI, mode of delivery, epidural anesthesia et to establish a predictive model. The unit logistic regression analysis showed that vaginal delivery (P<0.01), epidural anesthesia (P=0.03), pre-pregnancy BMI (P=0.035), age (P=0.04) and parity (P=0.04) were the predictors of postpartum SUI. The results are shown in Figure 2. The model has better recognition performance. According to this article, vaginal birth has the strongest correlation with SUI. Although it is impossible to determine the mode of delivery before delivery, in some cases, if the mother is identified as a high-risk group of SUI according to this model, we can guide her to perform pelvic floor muscle exercises during pregnancy and strengthen the management of pregnant women. Cesarean delivery is a protective factor in the short term, but the protective effect of cesarean delivery on SUI is limited in the long term[11]. Epidural anesthesia may prolong the second stage of labor. Models can be used to screen out high-risk groups and other pain relief methods can be selected to avoid the occurrence of SUI. Maternal age, parity, and pre-pregnancy BMI can be determined before delivery. BMI is associated with the occurrence of SUI, which may be due to increased intra-abdominal pressure due to weight gain during pregnancy, which is likely to cause damage to the pelvic floor tissue of the parturient, resulting in decreased urinary continence [12]. Medical staff can advise patients to manage their pre-pregnancy weight to reduce the incidence of urinary SUI. During pregnancy, medical staff can inform relevant risks, guide obstetrics scientific diet and exercise, control weight, and reduce the incidence of postpartum SUI.. Take necessary obstetric measures to avoid pelvic floor injury as much as possible to reduce the possibility of postpartum SUI.

Figure 2 .Factors Affecting Postpartum SUI



4. Conclusion

In this study, a risk prediction model for postpartum SUI was constructed based on the risk factors of SUI using machine learning methods. The model has high sensitivity, specificity and accuracy, and has strong clinical operability. It can be used as a screening tool for high-risk groups of SUI during pregnancy to guide clinical practice. Work. Although the model adopts internal cross-validation, multi-center, prospective large-sample external validation is still required to evaluate the generalization of the predictive model.

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Research on female pelvic floor health and rehabilitation based on "Hangzhou Maternal and Child Health Manual APP" 20201203B230

Analysis on the Effects of Whole-process Exercise Combined with Dietary Nutrition Intervention in the Treatment of Gestational Diabetes

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Abstract: **Objective:** To investigate the effect of whole-process exercise combined with dietary nutrition intervention in the treatment of gestational diabetes mellitus. **Methods:** A total of 84 patients with gestational diabetes admitted to our hospital within 1 year from 2022.05 to 2023.05 were selected as research subjects, and they were divided into control group (42 cases, using conventional intervention) and observation group (42 cases, using whole-process exercise combined with dietary nutrition intervention) according to the random number table method. The treatment effects of the two groups were analyzed. **Results:** Both groups achieved certain results after receiving the intervention, but the blood glucose level, weight gain level, maternal and infant outcomes of the observation group after the whole process of exercise combined with dietary nutrition intervention were better than those in the control group, and the differences were statistically significant (P<0.05). **Conclusion:** The use of whole-process exercise combined with dietary nutrition intervention in patients with gestational diabetes mellitus can effectively reduce their blood glucose level, control their weight gain, and reduce the risk of adverse maternal and infant outcomes.

Keywords: Gestational Diabetes; Whole Process Movement; Dietary Nutrition; Application Effects

Introduction

Gestational diabetes refers to diabetes that is first detected or developed during pregnancy, that is, the pregnancy comes first, and diabetes manifests later. The disease is often asymptomatic, and abnormally elevated blood glucose is usually found during prenatal examination or self-measurement of blood glucose in pregnant women. Some pregnant women may have symptoms such as dry mouth, polydipsia, polyuria, and polyphagia [1]. Pregnancy can make recessive diabetes dominant, make GDM occur in pregnant women who have not had diabetes before, and aggravate the condition of patients with original diabetes; The impact and extent of diabetes mellitus in pregnancy on the mother and child depends on the condition of diabetes and the level of glycaemic control. Patients with severe disease or poor glycemic control have a great impact on the mother and child, and the near and long-term complications of the mother and child are still high [2]. Therefore, effective interventions for gestational diabetes to control glycaemic are needed to reduce the risk of adverse maternal and infant outcomes. This article examines the effects of whole-process exercise combined with dietary nutrition interventions in the treatment of gestational diabetes mellitus, and is reported as follows:

1. Objects and methods

1.1 Object

84 patients with gestational diabetes admitted to our hospital within 1 year from 2022.05 to 2023.05 were selected as research subjects, and they were divided into control groups (42 cases, age 23-38 years, average 27.47±3.58 years; gestational age 20-35 weeks, mean 27.04±6.29 weeks; Body mass index 20-30kg/m^2, average 24.33±5.06kg/m^2; 24 cases of

nulliparous women and 18 cases of multiparous women) and observation groups (42 cases, age 22-37 years, mean 27.54±3.63 years; gestational weeks 20-36 weeks, mean 27.12±6.36 weeks; Body mass index 20-30kg/m^2, average 24.27±5.05kg/m^2; There were 23 cases of nulliparous birth and 19 cases of multiparous birth). There was no significant difference in general data between the two groups (P>0.05).

Inclusion criteria: Both groups of patients and their families were aware of the study and had signed an informed consent form; All of them meet the relevant diagnostic criteria in the *International Federation of Obstetrics and Gynecology (FIGO) Guidelines for the Diagnosis and Treatment of Gestational Diabetes* (2017); All were confirmed by 75g oral glucose tolerance test (OGTT); All are singleton pregnancies; Clinical data are complete.

Exclusion criteria: presence of preconception diabetes mellitus; Patients with heart, liver, kidney and other organ dysfunction; Patients with hyperthyroidism and hypertension during pregnancy; Multiple pregnancies; presence of severe malnutrition; People with mental disorders; those with cognitive impairments; Drop out of the investigator halfway.

1.2 Method

The control group used routine interventions, including health education, dietary guidance, exercise guidance, etc. The observation group used whole-process exercise combined with dietary nutrition interventions, specifically:

1.2.1 Dietary nutrition interventions

Professional dietitians should formulate personalized diet plans and nutrition plans according to the actual situation of pregnant women, such as BMI, weight, age, etc. Combined with the formula, total calories = 25-35 × (height -105), calculate the total daily caloric intake of pregnant women. In early pregnancy, the daily calorie intake should be the same as before pregnancy to avoid starvation; In the second trimester, total daily caloric intake increased by 700 kJ; In the later stages of pregnancy, total daily caloric intake increases by 1200 kJ. Rational distribution of nutrients, control protein 15-20%, fat 25-30%, carbohydrate 50-60%. The principle of dining is to follow small and frequent meals, add one meal between three meals, and maintain a nutritional ratio of 2:1:3:1:1:2:1 for one meal. The food is mainly composed of fruits, vegetables and staple foods, among which fruits are selected grapefruit, preserved fruit and low-sugar cherries; Choose vegetables that have a hypoglycemic effect, such as onions, spinach, bitter melon, and cucumbers; Choose high-fiber whole grains such as oats and buckwheat as staple foods. Prenatal doctors carefully record the daily diet of pregnant women, adjust unreasonable diets in time, supervise and guide family members and pregnant women to check blood glucose levels regularly, and measure blood sugar levels 2 hours after meals on the day of prenatal examination.

1.2.2 Whole-process exercise intervention

All patients will develop a personalized exercise plan during pregnancy based on age, gestational age, body mass index, and blood glucose level, including exercise method, duration of each exercise, and frequency of exercise per week. In terms of exercise mode, walking (slow walking and brisk walking), swimming, water aerobics, leisure, and appropriate physical activities were the main ones in the early stage; In the medium term, it is mainly suitable for walking, cycling, swimming, pregnant women's sports, and yoga; The later stage is mainly suitable for jogging, yoga and other sports. In terms of exercise time, the duration of each exercise should be controlled within 30 minutes. If it is high-intensity exercise, such as swimming, brisk walking, etc., the duration of a single exercise can be appropriately reduced. If GDM is severe in pregnant women, high-intensity exercise should continue for more than 25 minutes when it is safe to do so. In terms of frequency of exercise, exercise 3-4 times a week and choose 1 hour after meals. In order to prevent the occurrence of hypoglycemia during exercise, pregnant women should carry candy with them when exercising. After exercise, check the heart rate, according to the formula (220 - age) ×65%, to make sure that it is higher than the calculated result.

1.3 Observation indicators

Blood glucose levels in two groups were compared, including fasting blood glucose (FBG) and 2 h postprandial blood

glucose (2 h PG); The weight gain levels of the two groups were evaluated, and all patients were measured using a uniform weight scale, and their weight was measured before pregnancy, 12 weeks gestation, 24 weeks gestation, 36 weeks gestation, and before delivery, and each time was weighed 3 times, and the average value was taken. Preconception weight is based on the average of the patient's self-reported weight and measured weight at 6-8 weeks; Two maternal and infant outcomes were compared, including caesarean section, postpartum haemorrhage, polyhydramnios, fetal distress, macrosomia, and low body mass.

1.4 Statistical analysis

The SPSS20.0 software was used to statistically analyze the data, and the " $\bar{x} \pm s$ " was used to indicate the measurement data, and the *t*-test was used for the intergroup comparison results. "n,%" was used to indicate the measurement data, and the x^2 test was used for the between-group comparisons. $P<0.05$ indicates that the data difference is statistically significant.

2. Results

2.1 Comparison of blood glucose levels between the two groups

The blood glucose level in the observation group was significantly lower than that in the control group, and the difference was statistically significant ($P<0.05$). As shown in Table 1:

Table 1 Comparison of blood glucose levels between the two groups ($\bar{x} \pm s$, mmol/L)

Groups	Number of cases	FBG	2hPG
Observation group	42	4.35±0.47	5.63±1.40
Control group	42	5.47±0.53	6.45±1.85
t	-	10.247	2.291
P	-	0.001	0.025

2.2 Comparison of weight gain levels between the two groups

The weight gain level of the observation group was significantly lower than that of the control group, and the difference was statistically significant ($P<0.05$). As shown in Table 2:

Table 2 Comparison of weight gain levels between the two groups ($\bar{x} \pm s$, kg)

Groups	Number of cases	25-36 weeks gestation	36 weeks to before delivery
Observation group	42	3.06±0.89	0.87±0.13
Control group	42	4.55±1.27	1.23±0.23
t	-	6.227	8.831
P	-	0.001	0.001

2.3 Comparison of maternal and infant outcomes between the two groups

The maternal and infant outcomes in the observation group were significantly better than those in the control group, and the differences were statistically significant ($P<0.05$). As shown in Table 3:

Table 3 Comparison of maternal and infant outcomes between the two groups (n,%)

Groups	Number of	Cesarean	Postpartum	Hydramnio	Fetal	Fetal	Low

	cases		hemorrhage	s	distress	macrosomia	body mass
Observation group	42	3（7.14）	2（4.76）	2（4.76）	2（4.76）	4（9.52）	2（4.76）
Control group	42	10(23.81)	8(19.05)	9(21.43)	8(19.05)	11(26.19)	10(23.81)
x^2	-	4.459	4.087	5.126	4.087	3.977	6.222
P	-	0.035	0.043	0.024	0.043	0.046	0.013

3. Discussion

In the first and second trimesters, the mother's need for glucose often increases due to increased fetal glucose acquisition from the mother, increased maternal utilization of glucose by estrogen and progesterone. By the second and third trimesters, the increase in antagonism of insulin-like substances in pregnant women, such as tumor necrosis factor, leptin, placental prolactin, estrogen, progesterone, cortisol and placental insulinase, can reduce the sensitivity of pregnant women to insulin with increasing gestational age. In order to maintain normal glucose metabolism levels, pancreatic β cell function is compensatory during pregnancy, promoting insulin secretion. Gestational diabetes mellitus can occur in pregnant women with limited insulin secretion, and gestational diabetes mellitus may occur if the physiological change during pregnancy does not compensate for this physiological change and the blood glucose rises [3]-[4]. The disease adversely affects both mother and baby, so effective interventions are needed to control blood sugar.

In this study, the blood glucose level, weight gain level, and maternal and infant outcomes of the observation group were significantly better than those in the control group by taking whole-process exercise combined with dietary nutrition intervention for patients with gestational diabetes mellitus (P<0.05). It was stated that it was effective in reducing blood glucose levels, controlling weight gain, and reducing the risk of adverse maternal and infant outcomes. This is because whole-process exercise combined with dietary nutrition intervention is the main way to treat and intervene in gestational diabetes, which can be achieved by adjusting the diet of pregnant women and improving the exercise of pregnant women, which is also an individualized intervention [5]. Dietary nutrition interventions continued throughout pregnancy. At each stage, professional dietitians formulate a diet plan according to the actual situation, scientifically adjust the diet of pregnant women, reasonably match nutrients, and improve the scientificity and effectiveness of diet [6]-[7]. Exercise is an important indicator of personal health. Giving scientific exercise guidance to patients with gestational diabetes, choosing reasonable exercise projects based on the actual situation, and exercising under the condition of ensuring their safety are conducive to improving insulin sensitivity and reducing blood sugar levels [8].

In summary, the use of whole-process exercise combined with dietary nutrition intervention in patients with gestational diabetes mellitus can effectively reduce their blood glucose levels, control their weight gain, and reduce the risk of adverse maternal and infant outcomes.

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Novel Treatment Strategies for Periodontal Disease: Translational Research from Animal Models to Human Applications

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Abstract: **Objective:** Several emerging periodontal disease treatment strategies were emphasized, aiming to regulate the host immune response through host mediated therapy, which has shown good results in controlling inflammation and promoting periodontal tissue regeneration. Targeted antibacterial therapy, utilizing novel antibacterial drugs targeting periodontal pathogens, has been proven to be effective in reducing bacterial burden and improving clinical parameters. **Methods:** To conduct in-depth research on the pathogenesis of periodontal disease, discuss the interaction between periodontal health and overall condition, review current treatment methods, and explore promising translational research results, providing new methods for the management of periodontal disease. **Results:** Animal models play a key role in understanding the complex pathogenesis of periodontal disease and evaluating potential therapeutic interventions. These models allow for investigating disease mechanisms, evaluating treatment efficacy, and exploring safety profiles. By replicating various aspects of periodontal disease in animal models, such as inflammation, alveolar bone loss, and tissue regeneration, valuable insights into disease progression and treatment responses can be obtained. **Conclusion:** The research on the transformation from animal models to human applications is crucial for developing treatment strategies for periodontal disease. The integration of these emerging methods, including host regulated therapy, targeted antibacterial therapy, tissue engineering, and immunotherapy interventions, has the potential to fundamentally change clinical practice and improve patient prognosis. Further research, including carefully designed clinical trials, is necessary to verify the safety, effectiveness, and long-term effectiveness of these new treatment strategies.

Keywords: Periodontal Disease; Translational Research; Animal Models; Novel Treatment Strategies; Clinical Outcomes

1. Introduction

Current treatment strategies for periodontal disease primarily focus on mechanical debridement, antimicrobial therapy, and surgical intervention when necessary. Although these approaches have demonstrated efficacy in controlling the disease and improving clinical outcomes, they have certain limitations. For instance, mechanical debridement, which involves scaling and root planing, is unable to eliminate bacteria completely and may not effectively reach deep periodontal pockets. Antimicrobial therapy, such as systemic or local administration of antibiotics, is associated with the development of antibiotic resistance and has limited success in eradicating complex microbial communities within periodontal pockets. Surgical interventions, such as flap surgery and guided tissue regeneration, are invasive and may not be suitable for all patients due to factors like systemic health conditions or financial constraints[1,2].

To overcome these limitations and improve the management of periodontal disease, translational research from animal models to human applications has gained significant attention. Animal models provide valuable insights into the pathogenesis of periodontal disease, allowing researchers to study disease mechanisms, test potential therapeutic

interventions, and evaluate their safety and efficacy before translating them to human clinical trials. Additionally, animal models allow for the investigation of novel treatment strategies that may not be feasible or ethical to explore in human subjects.

The purpose of this review is to discuss the current understanding of periodontal disease, its impact on oral and systemic health, and the limitations of existing treatment approaches. Furthermore, we will explore recent advancements in translational research, focusing on novel treatment strategies derived from animal models that have the potential for human applications. By examining the latest scientific evidence and emerging trends, this review aims to provide insights into the future direction of periodontal disease management, highlighting the potential of innovative therapeutic interventions to revolutionize clinical practice and improve patient outcomes.

2. Methods

To explore the novel treatment strategies for periodontal disease, a comprehensive literature search was conducted using electronic databases, including PubMed, Embase, and Google Scholar. The search was limited to articles published in English from the year 2010 to 2023. The following keywords and combinations were used: "periodontal disease," "periodontitis," "animal models," "translational research," "novel treatment," and "human applications."

The inclusion criteria for selecting studies were as follows: (1) studies focusing on periodontal disease and its treatment, (2) studies utilizing animal models to investigate novel treatment strategies, (3) studies discussing the translational potential of these strategies for human applications, and (4) studies providing detailed experimental data and outcomes. Review articles, case reports, and studies without adequate experimental data were excluded.

The selected articles were carefully reviewed, and relevant information related to the pathogenesis of periodontal disease, existing treatment methods, and promising novel treatment strategies derived from animal models was extracted. Data regarding experimental design, sample sizes, treatment protocols, and outcomes were analyzed and synthesized to provide a comprehensive overview of the translational research in this field.

3. Results

3.1 Pathogenesis of Periodontal Disease: Animal Models Unraveling the Complex Mechanisms

Animal models have played a crucial role in unraveling the complex pathogenesis of periodontal disease. These models, including rodents, non-human primates, and canines, have allowed researchers to study the dynamic interactions between bacterial pathogens, host immune response, and the underlying molecular and cellular mechanisms involved in periodontal tissue destruction.

Experimental periodontitis models in animals have provided valuable insights into the initiation and progression of the disease. For instance, studies utilizing ligature-induced periodontitis in rats have demonstrated the formation of biofilms, the infiltration of inflammatory cells, and the activation of various cytokines and matrix metalloproteinases, which contribute to the destruction of periodontal tissues[3].

Animal models have also been instrumental in investigating the role of specific bacterial species in periodontal disease. For example, studies using germ-free animals colonized with periodontal pathogens, such as Porphyromonas gingivalis, have revealed their ability to induce inflammation, alveolar bone loss, and systemic immune responses resembling human periodontitis[4,5,6].

Furthermore, animal models have facilitated the study of genetic and epigenetic factors that contribute to periodontal disease susceptibility. Transgenic and knockout animal models have allowed researchers to manipulate specific genes and observe the resultant phenotypic changes, shedding light on the genetic basis of periodontal disease and potential therapeutic targets.

3.2 Translational Research: Novel Treatment Strategies from Animal Models to Human Applications

Translational research from animal models to human applications has paved the way for the development of novel treatment strategies for periodontal disease. By leveraging the insights gained from animal studies, researchers have identified promising therapeutic interventions that target specific pathogenic mechanisms or enhance the regenerative capacity of periodontal tissues[7,8,9].

One such approach is the use of host-modulating agents that aim to modulate the host immune response and promote resolution of inflammation. Animal models have demonstrated the efficacy of these agents, such as host-derived antimicrobial peptides and immunomodulatory molecules, in reducing periodontal tissue destruction and promoting tissue repair. Clinical trials in human subjects are underway to evaluate their safety and effectiveness[10].

Another emerging strategy is the development of targeted antimicrobial therapies that selectively eliminate periodontal pathogens while preserving beneficial oral microbiota. Animal models have been instrumental in evaluating the efficacy of antimicrobial peptides, antimicrobial photodynamic therapy, and antimicrobial nanoparticles in controlling periodontal pathogens and reducing inflammation. These approaches hold promise for overcoming the challenges associated with antibiotic resistance and broad-spectrum antimicrobial therapy.

4. Conclusion

Periodontal disease presents significant challenges in terms of its management and impact on oral and systemic health. Current treatment modalities have limitations, necessitating the exploration of novel strategies for improved outcomes. Translational research from animal models to human applications offers exciting possibilities for advancing periodontal disease treatment.

Through the use of animal models, researchers have gained valuable insights into the complex mechanisms underlying periodontal disease and identified potential targets for intervention. Novel treatment strategies, including host modulation, targeted antimicrobial therapy, regenerative medicine, and gene-based therapies, hold promise for revolutionizing periodontal disease management.

By leveraging the knowledge gained from animal studies and translating it into human applications, these innovative approaches have the potential to enhance the efficacy, precision, and patient-centeredness of periodontal disease treatment. Further research, including well-designed clinical trials, is warranted to validate these promising translational findings and establish their clinical effectiveness in improving periodontal health and overall well-being.

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ACE Inhibitor Combined with Spironolactone in the Treatment of Non Adenoma Primary Hyperaldosteronism

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Abstract: Objective: To investigate the clinical effect of ACE inhibitor (ACEI) combined with Spironolactone in the treatment of non adenoma primary Hyperaldosteronism (PA). Methods: 80 patients who entered our hospital from August 2021 to August 2022 were randomly selected for this investigation. According to the random grouping method, the patients were randomly divided into the observation group and the control group. A total of 40 patients in the control group were treated with Spironolactone. A total of 40 patients in the observation group were treated with perindopril on the basis of the control group. After treatment in different ways, the treatment efficiency of the two groups was compared, The left ventricular end diastolic diameter (LVEDD), left ventricular Ejection fraction (LVEF) and left ventricular end systolic diameter (LVESD) before and after treatment were compared between the two groups, and the incidence of adverse reactions after treatment was compared between the two groups. Result: The effective rate of treatment in the observation group was 95%, significantly higher than 78% in the control group. The difference between the two groups was significant and statistically significant ($p<0.05$). Before treatment, there was no significant difference in LVEDD, LVEF, and LVESD between the two groups ($p>0.05$). After treatment, the LVEF of both groups of patients increased, but the observation group was significantly higher than the control group, and the LVEDD and LVESD of both groups of patients were significantly reduced, but the observation group was significantly lower than the control group, The difference between the two groups was significant and statistically significant ($p<0.05$). The incidence of adverse reactions in the observation group was 12.5%, while the incidence of adverse reactions in the control group was 15%. There was no significant difference between the two groups and there was no statistically significant difference ($P>0.05$). Conclusion: The combination of Spironolactone and ACEI in PA patients has a more significant effect, can significantly improve the treatment efficiency of patients, improve the cardiac function indicators of patients more significantly, and will not increase additional adverse reactions. It has clinical value.

Keywords: ACE Inhibitor; Spironolactone; Non Adenomatous Type; Primary; Hyperaldosteronism

Introduction

PA is a Endocrine disease, which is characterized by the continuous increase of Aldosterone (ALD) level in the body, while renin, blood pressure and blood volume are not significantly affected [1]. It usually refers to the production of excessive ALD in tissues outside the adrenal gland, leading to an increase in ALD concentration in the blood. The main symptoms of the disease include hypertension, Hypokalemia, muscle weakness and arrhythmia. If not treated in time, blood pressure may rise, while long-term hypertension will increase the risk of cardio cerebral Vascular disease, such as cardiac overload, cardiac

hypertrophy, heart failure and other heart diseases. In addition, long-term hypertension can also cause damage to the kidneys, and long-term failure to treat it may lead to impaired renal function, posing a serious threat to the patient's life and health. Therefore, for such patients, timely medical treatment should be sought to avoid adverse consequences. In clinical practice, drug therapy is the main method for treating this disease. For patients who cannot control their condition, surgery can be chosen to remove the adrenal gland or surrounding tissues. Drug therapy mainly includes ACEI, Angiotensin II receptor blocker, Calcium channel blocker, Diuretic and Aldosterone receptor antagonist. Due to the different mechanisms of action of various drugs, there are also certain differences in the therapeutic effects produced. This investigation will explore the clinical effect of ACEI combined with Spironolactone in the treatment of this disease. The specific reports are as follows:

1. Materials and Methods

1.1 General Information

The research subjects of this survey were a total of 80 randomly selected patients who entered our hospital for treatment from August 2021 to August 2022. According to the random grouping method, the patients were divided into an observation group and a control group, with an average of 40 patients in each group. The observation group had 22 male patients and 18 female patients, ranging in age from 42 to 78 years old, with an average age of (56.34 ± 4.12) years old. The control group had 21 male patients and 19 female patients, The age ranges from 41 to 77 years old, with an average age of (56.04 ± 3.92) years; Inclusion criteria: (1) The patient is over 18 years old; (2) Patient's systolic blood pressure ≥ 140mmHg and/or diastolic blood pressure ≥ 90mmHg; (3) The patient's blood potassium is normal (3.5-5.5mmol/L); Exclusion criteria: (1) Pregnant or lactating women; (2) Other obvious diseases besides hypertension (such as heart disease, liver disease, kidney disease, etc.); (3) Blood potassium<3.5mmol/L or>5.5mmol/L; (4) Hypertension caused by other reasons; There was no significant difference in general information such as gender and age between the two groups of patients, with statistical significance ($p<0.05$).

1.2 Method

After admission, both groups of patients need to closely monitor the patient's blood pressure, heart rate, electrocardiogram, blood potassium, blood sodium, blood pH and other indicators, and give routine treatment, such as digitalis drugs to improve myocardial contractility, increase Cardiac output, and improve cardiac function; Loop Diuretic, Thiazide, etc. can promote the excretion of sodium, water and potassium, reduce blood pressure and correct low potassium; Rectify acid-base imbalance caused by metabolic Acidosis and low potassium by intravenous injection of sodium bicarbonate or sodium chloride; At the same time, it is recommended that patients reduce salt and fat intake, control weight, avoid excessive drinking and smoking, so as to reduce the burden of the heart and lower blood pressure. On this basis, the patients in the control group were given Spironolactone orally, 20mg/time, 3 times/day, and the patients in the observation group were given perindopril orally, 4mg/time, 1 time/day, on the basis of the control group. The patients in both groups were treated for 3 months.

1.3 Observation indicators

(1) The clinical effects of the two groups of patients after treatment were statistically analyzed. The blood pressure, blood potassium and Aldosterone levels of the patients were controlled. The disappearance of clinical symptoms such as fatigue and dizziness was regarded as significant effect. The improvement of blood pressure, blood potassium, Aldosterone levels and clinical symptoms such as fatigue and dizziness was regarded as effective. The absence of significant changes in blood pressure, blood potassium, Aldosterone levels and clinical symptoms such as fatigue and dizziness was regarded as invalid, Effective rate=(significant+effective)/total number of patients x 100%; (2) Measure the cardiac function indicators of patients before and after treatment, including LVEDD, LVEF, and LVESD levels; (3) During the treatment, adverse reactions such as Hypotension, hyperkalemia, and renal function damage were recorded.

1.4 Statistical Analysis

The data in this experiment were statistically analyzed by SPSS 28.0 software, in which the measurement data were displayed in ± s] table, using t test, the counting data were expressed in percentage, and the comparison was performed by Chi-squared test, with $p<0.05$ as the difference with statistical significance.

2. Results

2.1 Comparison of treatment effectiveness between two groups of patients

The effective rate of treatment in the observation group was 95%, while the effective rate in the control group was 78%, which was significantly lower than the observation group. The difference between the two groups was significant and statistically significant ($p<0.05$). Please refer to Table 1 for details:

Table 1 Comparison of treatment effectiveness rates between two groups of patients (n=80)

grouping	Number of cases	Apparent effect	effective	invalid	Effective rate%
Observers	40	22	16	2	95
controlgroup	40	11	20	9	78
x^2	-	-	-	-	4.910
P	-	-	-	-	0.026

2.2 Comparison of cardiac function indicators between two groups before and after treatment

Before treatment, there was no significant difference in LVEDD, LVEF, and LVESD between the two groups of patients ($p>0.05$). After treatment, the LVEF of both groups of patients increased, but the observation group was significantly higher than the control group, and the LVEDD and LVESD of both groups of patients decreased significantly. However, the observation group was significantly lower than the control group, and the difference between the two groups was statistically significant ($p<0.05$). Please refer to Table 2 for details:

Table 2 Comparison of cardiac function indicators between two groups of patients before and after treatment[$\bar{x}$ ±s]

grouping	Number of cases	LVEDD（mm）		LVEF（%）		LVESD（mm）	
		BEFORE	After treatment	BEFORE	After treatment	BEFORE	After treatment
Observers	40	61.85±3.48	47.69±4.15	32.16±2.14	53.87±5.19	52.63±3.49	34.61±3.14
control group	40	61.87±3.26	56.12±4.06	32.42±2.68	46.19±4.68	52.75±3.16	39.42±3.68
t	-	0.027	9.183	0.479	6.950	0.161	6.289
P	-	0.979	0.000	0.633	0.000	0.872	0.000

2.3 Comparing the incidence of adverse reactions between two groups of patients

During the treatment process, the incidence of adverse reactions in the observation group was 12.5%, while the incidence of adverse reactions in the control group was 15%. There was no significant difference between the two groups and there was no statistical significance ($p>0.05$). Please refer to Table 3 for details:

Table 3 Comparison of Adverse Reaction Incidence between Two Groups of Patients (n=80)

grouping	Number of cases	Hypotension	Hyperkalemia	impaired renal function	Occurrence rate%

Observer	40	2	2	1	12.5
controlgroup	40	3	2	1	15
x^2	-	-	-	-	0.136
P	-	-	-	-	0.711

3. Discussion

ACEI is a kind of drug used to reduce hypertension. Its mechanism of action is to inhibit the activity of angiotensin converting enzyme (ACE), thereby preventing angiotensin I from transforming into angiotensin II, reducing Vasoconstriction and water sodium retention, thereby reducing blood pressure. In addition, ACEI can also promote the improvement of glomerular filtration rate, reduce Proteinuria and kidney damage [3]. Spironolactone is a Diuretic. Its mechanism is to prevent the reabsorption of sodium ions and water in the kidney, thereby increasing urine output, reducing water and sodium retention, and reducing blood volume and blood pressure. It mainly acts on the distal convoluted tubules and collecting ducts of the kidneys, inhibiting the transport of sodium and potassium, and promoting the excretion of sodium and water [4].

To sum up, the combined use of ACEI and Spironolactone is an effective method to treat PA patients. They have the advantages of improving the therapeutic effect, improving patients' cardiac function, and high safety, and can be widely used in clinical practice.

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Health Seeking Behaviors and Healthcare Utilization in Women Diagnosed with Endometriosis: A Systematic Review

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Abstract: Introduction: Endometriosis is a chronic inflammatory condition affecting women of childbearing age worldwide. There are limited roles of medical or surgical treatments. Endometriosis not only affects quality of life but also results in significantly increased healthcare service utilization. The review aims to examine the existing literature to gain a comprehensive understanding of healthcare resource utilization in endometriosis patients across different countries. Methods: The systematic review was conducted to include studies on healthcare utilization among endometriosis patients from January 2000 to 2023. The search was conducted in Medline and Embase databases. Search terms related to endometriosis and healthcare resource utilization were used. Studies published in English with data on healthcare utilization across inpatient, outpatient, emergency care, and other services (such as specialist and primary care physician) were included. The studies only examined the cost- or cost-effective analysis were excluded. Results: Women with endometriosis experience a higher prevalence of gynecological and abdominal pain-related conditions, along with a greater burden of comorbidities and infertility issues. They also exhibit significantly higher healthcare utilization across various healthcare settings, including emergency care, inpatient visits, outpatient visits, and specialist care. These utilization differences remain significant up to one year before the diagnosis and persist for at least five years following the diagnosis, with the highest disparity observed in the first year after diagnosis. Conclusion: The systematic review examines the health-seeking behavior and healthcare utilization patterns among women diagnosed with endometriosis across different countries. The findings indicate that women with endometriosis experience a higher burden of medical comorbidities and exhibit increased rates of emergency care visits, inpatient visits, and outpatient visits.

Keywords: Endometriosis; Infertility; Pelvic Pain; Medical Burden; Seek Medical Care; Healthcare; Chronic Inflammatory Diseases

Introduction

Endometriosis is a systemic gynecological condition characterized by the presence of endometrial glands and stroma tissue in ectopic sites outside the uterus. Despite being a common disease affecting approximately 10% of women of reproductive age worldwide, endometriosis has historically been under-recognized and often overlooked [1]. Endometriosis affects both quality of life and productivity of individuals, it also results in significant impact on

healthcare service utilization and cost [11]. Women with endometriosis have a higher burden of comorbidities, including upper respiratory infection, ovarian cysts, uterine fibroids, fatigue, vaginitis and depression, leading to a significantly higher number of outpatient and emergency visits [2]. Healthcare expenditures and health-related productivity loss are notably

higher among patients with severe stages of the disease, longer diagnostic delay and concurrent symptoms of pelvic pain and infertility [4].

Understanding the health seeking behavior among affected individuals provides valuable insight into the disease burden, direct health-care related costs, and informs the future decision-making and resource allocation. This review aims to assess and synthesize existing literature on endometriosis-related healthcare resource utilization.

Methods

Literature search

The systemic review follows the PRISMA guideline (Supplementary Figure 1). Medline and Embase search were performed in May 2023, with search terms relating to endometriosis and healthcare resource utilization (Supplementary Table 1). The search was limited to human studies published in English between January 2000 to May 2023. No restrictions were imposed to subject age or study type.

Inclusion criteria and study selection

The studies of interest were limited to those that evaluates the healthcare utilization and/or costs among different healthcare settings including emergency services, inpatient hospitalization, and outpatient specialist services. Search results were screened by two independent reviewers (JC 100%, YL 20%), remaining articles were assessed for eligibility by reviewing methods or full text.

Data extraction

Data extraction was performed by author JC, the following parameters were recorded: Study, study period, setting, country, subjects, types of study and types of health care utilized. A narrative synthesis of extracted data was used to present findings as a meta-analysis was not feasible due to heterogeneity of the study design and outcomes.

Result

Summary of included studies

study (year)	study design and data source	study peroid	Setting	Data	country/sector	subjects	Types of study	Aim of the study
Soliman et al(2018)	Truven Health Marketscan Commercial Claims and Encounters and Market Scan HPM databases	Jan 1 2018-June 30 2014	Inpatient admission, ER, physician offices visit, OB/GYN specalist	Significant higher rate of healthcare utilization. (More ER, physician, OB/GYN pre and post-index peroids), higher all-cause hospital admission. Increased utilization 12 momnth prior to index date and post-index	USA	113, 506 women with endometriosis	Retrospective cohort study	Compare HRU during the 12-month pre- and post- index peroid
Eisenberg et al(2022)	nationwide healthcare plan database	1998 to 2015	Inpatient, ER, family physician, gynaecologist	Endometriosis group showed significant higher SES and lower BMI, reside in the central region. endometriosis was significantly associated witha higher burden of infertility, chronic comorbidities, utilization of healthcare services,pain medications, and antidepressants, and overall, 1.75-fold higher direct medical costs	Israel	6146 women with endometriosis aged 15-55years	Retrospective case-control study	Evaluate burden-healthcare resource utilization, total directal medical costs, infertility and comorbidity rates
Fuldeore et al(2015)	Truven Health Marketscan Commercial Claims and Encounters and Market Scan HPM databases	2000-2010	Inpatient, ER, Outpatient	Endometriosis patients had a higher utilization of outpatient and emergency room services during each pre- and postindex year, and a higher utilization of inpatient services during the last preindex year and all 5 postindex years.		37,570 endometriosis 18-45 years	Retrospective case-control study	Assess HCRU during the 5years before and after diagnosis
Soliman et al(2019)	Truven Health Marketscan Commercial Claims and Encounters and Market Scan HPM databases	Jan 2008-sept 2014	Inpatient admission, ER, physician offices visit, OB/GYN specalist	HCRU were significant higher among endometriosis cases, largely driven by hospitalization and highest in the first year after endometriosis diagnosis. HCRU were significant higher than pre-index. Endometriosis patient has higher pre-index comorbidity score and high pre-index HCRU.	USA	15,615 endometriosis patients 18-49 years	Retrospective cohort study	Evaluate direct healthcare utilization and costs among women newly diagnosed with endometriosis

Patient characteristics

Women diagnosed with endometriosis tend to have a higher socioeconomic status, lower body mass index (BMI), and reside in urban areas (1). They also experience a greater medical burden, as evidenced by significantly higher mean Charlson Comorbidity Index (CCI) scores (2). There are elevated rates of pain-related abdominal conditions, including irritable bowel syndrome and appendicitis, among women with endometriosis. In addition, women with endometriosis have a higher prevalence of other gynecological conditions including ovarian cysts and uterine fibroids, and chronic comorbidities, such as cardiovascular disease, hypertension, diabetes, cancer, depression, and chronic kidney disease.

Emergency care utilization

Endometriosis patients have significantly higher rates of emergency department visits, with 12.5% of patients having visited the emergency department at least once in one year (5). Compared to their matched control group, they are 1.7 times more likely to visit the emergency department at least once and 1.9 times more likely to attend the emergency department at

least five times (5).

A US study showed all-cause related emergency department visits occurred in 71.5% cases in endometriosis patients compared to 42.2% in the control group (8). A woman with endometriosis has an average of 3.24 visits to emergency each year, with 0.15 visits attributable to endometriosis-related causes. In contrast, the control group averages 1.24 visits to the emergency department for various health related reasons (8). These differences in emergency care utilization persist over a ten-year period, with the most significant difference observed in the year before and after diagnosis, as well as in the mean annual number of emergency department visits (8).

Inpatient utilization

Hospital admissions are significantly more frequent among endometriosis patients, with 12.5% of patients being admitted to the hospital at least once during a one-year period, which is twice the rate observed in control patients (5). A 10-year study showed that endometriosis patients had a higher proportion of hospital admissions and longer lengths of stay (LOS), with 8.6% of endometriosis patients being admitted and an average LOS of 0.44 days per patient, compared to 8.2% and an average LOS of 0.38 days per patient in the control group (5).

In the first year after the index date, the utilization difference between endometriosis patients and control patients was the highest. A study found that 39.7% of endometriosis patients had at least one inpatient visit, with an average of 0.45 visits per patient and a mean LOS of 1.63 days per patient. In comparison to 7.7% in the control patients with an average of 0.09 visits per patient and a mean LOS of 0.38 days per patient (7). This difference in utilization between the two groups remained significant for four years.

Another study found that during the 12-month post-index period, 29% of patients in the endometriosis cohort were admitted to the hospital for various reasons. This percentage was significantly higher compared to the control cohort, where the hospital admission rate was only 6% (6). Additionally, a separate study reported that 33.1% of the case group had all-cause healthcare-related hospital admissions, with an average length of stay (LOS) of 1.30, which was significantly higher compared to 7.2% in the control group with an average LOS of 0.39. The utilization of inpatient services related to endometriosis in this cohort was estimated to be 14.5% with an average LOS of 0.52 (7).

Specialist Utilization

Women diagnosed with endometriosis have significantly higher likelihood of seeking care from a gynecologist compared to individuals without the condition. Around 68% of women with endometriosis consult a gynecologist, while the proportion is lower at 55.5% among the control group. Approximately 20% of patients with endometriosis have at least five visits to a gynecologist within a one-year period. The higher prevalence of infertility in women with endometriosis, accounting for 36.9% of the study group, also contributes to increased utilization of specialized healthcare services (5).

Outpatient utilization

Endometriosis patients consistently have a higher percentage of outpatient visits. Throughout each year of the study period, a statistically significant higher percentage of endometriosis patients (ranging from 91.9% to 98.2%) had outpatient visits compared to the control group (ranging from 85.4% to 90.2%). Furthermore, the mean annual number of outpatient visits for endometriosis patients is persistently higher than that of control patients in every year of the 10-year study period. The disparity between endometriosis patients and controls ranged from 2.15 to 6.33 visits per year per patient, with the highest difference observed in the first year following the index date (7).

Primary care physicians

Endometriosis women, particularly those in the younger age group (under20 years old) are significantly more likely to see a primary care physician. It is estimated 955 of endometriosis patients visit their family physician at least once, 1.9 times higher than their paired control. In an US study, it is estimated that nearly 97% of patients visited a physician compared to

87% in the control group (5).

Discussion

The findings of this study provide valuable insights into the healthcare utilization patterns of women with endometriosis compared to control patients. It is evident that women diagnosed with endometriosis exhibit distinct characteristics and face a higher medical burden. These individuals tend to have higher socioeconomic status, lower body mass index, and are more likely to reside in urban areas. Additionally, they experience a higher prevalence of comorbidities, such as cardiovascular disease, hypertension, diabetes, cancer, depression, and chronic kidney disease.

Emergency care utilization is notably higher among women with endometriosis, with a greater propensity for emergency department visits compared to control groups. The rates of emergency department visits in the endometriosis cohort are notably higher, with a substantial proportion of patients attending the emergency department at least once annually. This increased utilization is primarily driven by pain-related conditions, potentially influenced by the use of opioid analgesics, which could contribute to the increased rate of emergency care utilization.

Inpatient utilization is also considerably higher among women with endometriosis. The proportion of hospital admissions among endometriosis patients is double that of the control group, maintaining a significant difference over a 10 year study period. Particularly, the mean length of hospital stay is prolonged for endometriosis patients, especially in the year preceding the index date. This suggests that women with endometriosis require more frequent and prolonged inpatient care, potentially due to the severity of symptoms and the necessity for surgical interventions or other specialized treatments.

Specialist utilization, particularly gynecological care, is more prevalent among women with endometriosis as evidenced by a higher proportion of these patients seeking care from gynecologists compared to the control group. This is expected given the nature of endometriosis , which primarily affects the reproductive system. The higher prevalence of infertility among women with endometriosis further contributes to increased utilization of specialized healthcare services.

Outpatient utilization consistently demonstrates higher rates among women with endometriosis, as indicated by the higher proportion of outpatient visits and the greater number of annual visits compared to control patients. This pattern highlights the ongoing need for symptom management and treatment monitoring. The greatest disparity in outpatient visits is observed in the first year following the index date, highlighting the initial impact of diagnosis and treatment initiation on healthcare utilization.

Primary care physician utilization is also increased among women with endometriosis, particularly in the younger age group. These individuals are more likely to visit their primary care physicians compared to control patients.

This underscores the necessity for comprehensive and coordinated care across various healthcare providers to address the multifaceted needs of these patients.

Conclusion

In conclusion, women with endometriosis experience higher rates of emergency care utilization, inpatient admissions, specialist utilization (specifically gynecological care), and outpatient visits compared to control patients. These findings emphasize the substantial healthcare burden associated with endometriosis and highlight the importance of comprehensive and specialized care to address the complex needs of these patients. Further research and healthcare initiatives are needed to improve the management, accessibility, and coordination of care for women with endometriosis.

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Screening of Potential Hub Genes in Glioma Progression Based on Bioinformatics Analysis

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Abstract: Objectives: Glioma is the most common primary tumor of the central nervous system, and its therapeutic effect is not optimistic. In recent years, related therapeutic technologies have developed rapidly, but unfortunately, the improvement of clinical therapeutic effect is not satisfactory. In addition to conventional therapies, there are some attractive therapies, such as biological therapy (immunotherapy), gene therapy, etc[1]. Therefore, searching for potential target genes of glioma is of great significance for developing new therapeutic directions and designing new biomarkers[2]. Methods: Download gene expression data set, GSE137902 gelatin and GSE13790 matrix through NCBI-G to screen overlapping differential expression genes (DEGs). In order to identify central genes from these genes, we conducted protein protein interaction (PPI) network. To further explore the potential mechanism of central genes in glioma, we performed gene ontology (GO) and Kyoto Gene and Genome Encyclopedia (KEGG) analysis. Then get the intersection of key genes according to five algorithms of Closeness Degree EPC MCC Stress. The intersection is obtained through GSE117423, GSE188256 and GSE90598 in geo database, and finally verified through Receiver Operating Characteristic (ROC) curve. Results: A total of 1274 differentially expressed genes are identified, and then 309 genes are obtained by intersection of the two. 16 Hub genes were obtained, and then the intersection of the two genes with GSE117423, GES188256 and GSE90598 genes was verified to obtain the key gene TIMP1 of glioma. Made the ROC curve of key gene.The intersection with hub gene was determined to identify TIMP1 as the key gene. Conclusion: The DEGs and Hub genes and signal pathways found in this study can confirm that the key gene TIMP1 is closely related to the occurrence and evolution of glioma, and provide candidate targets for the diagnosis and treatment of glioma.

Keywords: Glioma; Degs; Hub Genes; Microarray; Enrichment Analysis

Introduction

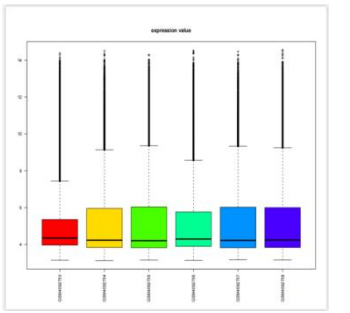
Glioma is the most common malignant brain tumor in central nervous system.Despite advances in the treatment of glioma such as surgery and chemoradiotherapy,most patients are easy to relapse,resulting in adverse clinical outcomes[3]. The current standard treatment methods, including surgical resection and radiotherapy and chemotherapy, do not bring satisfactory therapeutic effect, which is related to the aggressive growth of glioma in the brain, blood-brain barrier limitation and tumor drug resistance. It is one of the most common intracranial malignant tumors, with an annual incidence of about 3-6.4/100,000. The effect of traditional therapy on patients with glioma is poor. Therefore, it is necessary to further study the key genes and pathways related to glioma, and the development of bioinformatics and tumor genomics provides the possibility to discover new tumor biomarkers and therapeutic targets.

As an efficient and large-scale bioinformatics technology, gene array can detect and analyze differentially expressed genes in pathological tissues and normal tissues, so as to understand the changes of the whole genome in the process of tumorigenesis as a whole. By comparing the normal group and glioma patients, the selected differential genes were analyzed by bioinformatics to further understand the molecular mechanism of glioma. Therefore, we can use microarray technology and bioinformatics analysis to screen key genes of glioma

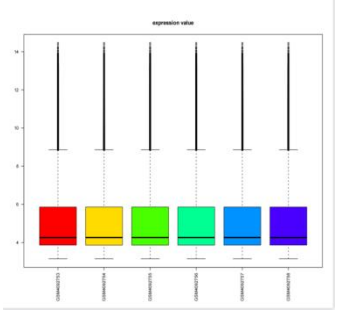
In order to identify the key genes related to glioma, we conducted a series of analysis based on the high-throughput sequencing data obtained from two data sets GSE137902 gelatin and GSE137902 matrix. We first determined the common DEG in the two databases, because the combination of multiple databases can provide more reliable results. Well, we used the online tools of Metascape website and DAVID website to analyze GO and KEGG terms, explore the main ways of DEG enrichment, and explore the research progress of glioma. The protein interaction network between DEGs was constructed by using online tools on STRING website, and was illustrated by using the software Cytoscape. We use the cytoHubba plug-in of Cytoscape to search for hub genes. Here, we use four different models, DEGREE, MCC, EPC and Stress, to screen the most important hub genes. Then, we used the online tool of human protein mapping to explore the genes in the central gene network related to glioma. Finally, we used GSE117423, GSE188256, GSE90598 in GEO database to intersect with hub gene, and concluded that TIMP1 may be the key gene of glioma. After further exploration of ROC curve, we were surprised to find that AUC>0.5 in ROC curve, which verified TIMP1 as a key gene of glioma. In conclusion, our study provides a new potential immunotherapeutic target for glioma biotherapy.

Materials and methods Dataset selection

*Microarray Data. GEO.*Microarray Data. GEO (https://www.ncbi.nlm.nih.gov/ geo/) is a database containing high-throughput gene expression data, chips, and microarrays [4]. In this study, we downloaded an original microarray dataset GSE137902 from NCBI Gene Expression Synthesis Database (NCBI-GEO)（GPL13667 [HG-U219] Affymetrix Human Genome U219 Array）Endothelial cells isolated from glioblastoma and normal brain were cultured on gelatin and matrix gel as monolayer, including 3 normal brain endothelial cells as monolayer gelatin, 6 glioblastoma.



A



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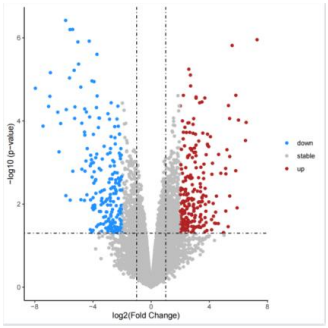

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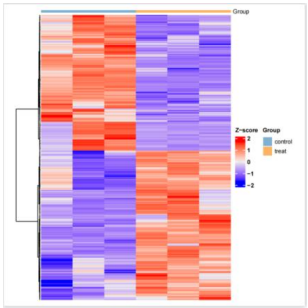
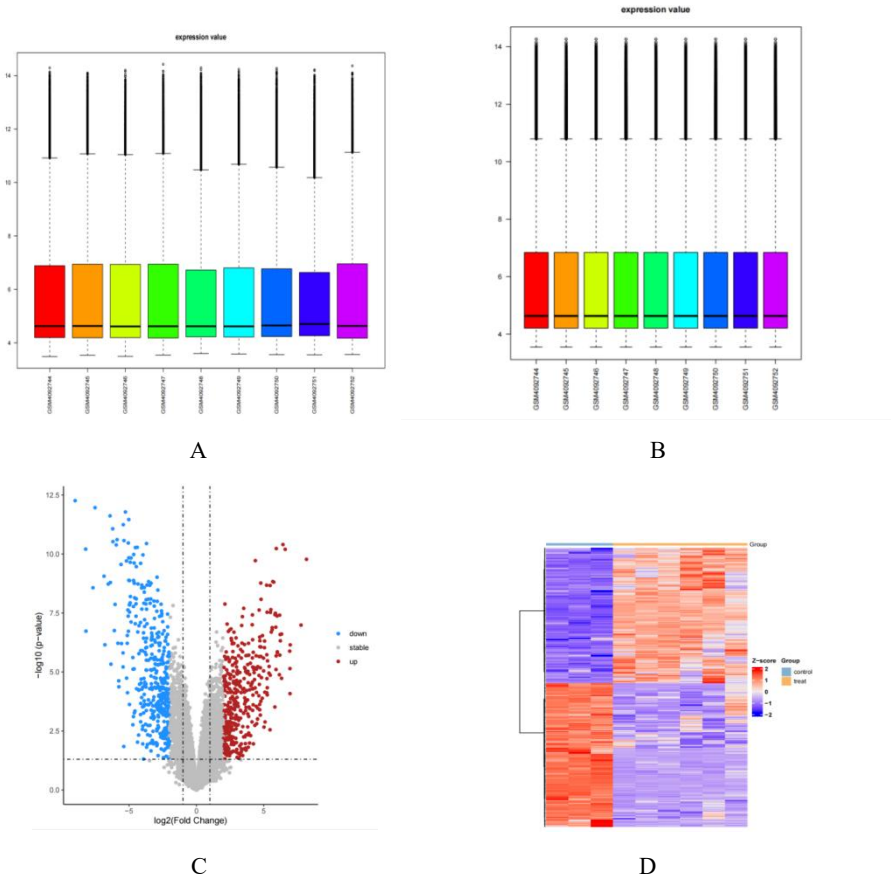


D

Figure 1.(A) GSE137902 Substation Culture Box Line Diagram of Substrate Culture Data before Standardization.(B)A GSE137902 Substation Culture Data Standardized Box Line Diagram.(C)Volcano Map, points represent up-regulated genes, and blue points represent down-regulated genes. Genes with no significant difference are shown in black. The differences are set as |logFC|>2 and P<0.05.（D） GSE137902 Substation Culture heatmap.

*Data Processing.*The R languaget includes a data processing and storage facility, operators for array and matrix calculation, a set of data analysis tools graphic functions for analysis and display, and the ability to analyze subsets in geo databases.Data Processing.[5] GEO2R (http://www.ncbi.nlm.nih. gov/geo/geo2r/) is an analysis tool that comes with the GEO database and is used to compare two sets of data; it can be used to analyse any GEO series. P < 0.05 and logFC >1or <–1 were set as the cut-off criteria[6].



A B C D

Figure 2.(A) GSE137902 gelatin culture Box Line Diagram of Substrate Culture Data before Standardization.(B)GSE137902 gelatin culture Data Standardized Box Line Diagram.(C)Volcano Map, points represent up-regulated genes, and blue points represent down-regulated genes. Genes with no significant difference are shown in black. The differences are set as |logFC|>2 and P<0.05.（D） GSE137902 gelatin culture heatmap.

*Identication of Diferentially Expressed Genes (DEGs).*The expression matrix of GSE137902 and GPL13667 platform files is downloaded from GEO website, and the data is converted into expression matrix data and grouping data using manual sorting and Perl language software. The R language is used for standardization of all expressed data. DEGs analysis R package using Limma[7]. Genes which expression multiple changes were greater than 2 and P<0.05 were considered as DEGs. The volcano and heatmap drawings are generated by the R package.

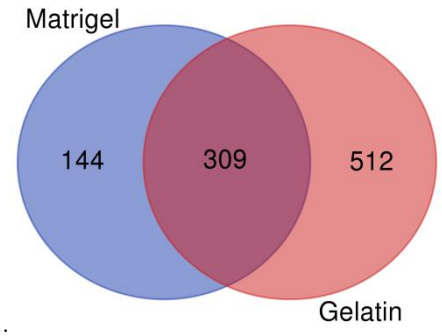
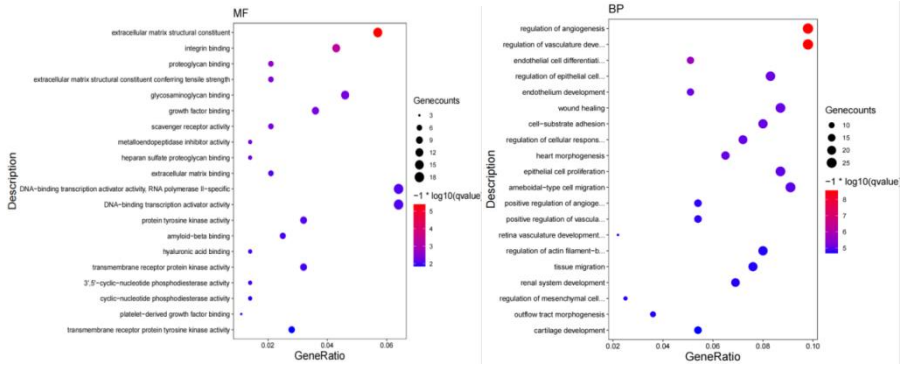


Figure 3.309 genes were obtained from the intersection of gelatin and matrix differential genes

*Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes(KEGG).*Functional and Pathway Enrichment Analyses. First, we performed Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) analysis on DEGs by using the Metascape software (http:// metascape.org/gp/index.html#/main/step1) [8]. Metascape is an online analysis tool with integrated discovery and annotation capabilities. To ensure the credibility of the results, we also analysed the data with online tools from the DAVID website and visualized the results via the R language.e DAVID website (https:// david.ncifcrf.gov/home.jsp) is a bioinformatics data resource composed of a comprehensive biological knowledge base and analytical tools [9]. A P value < 0.05 was set as the cut-off criterion.



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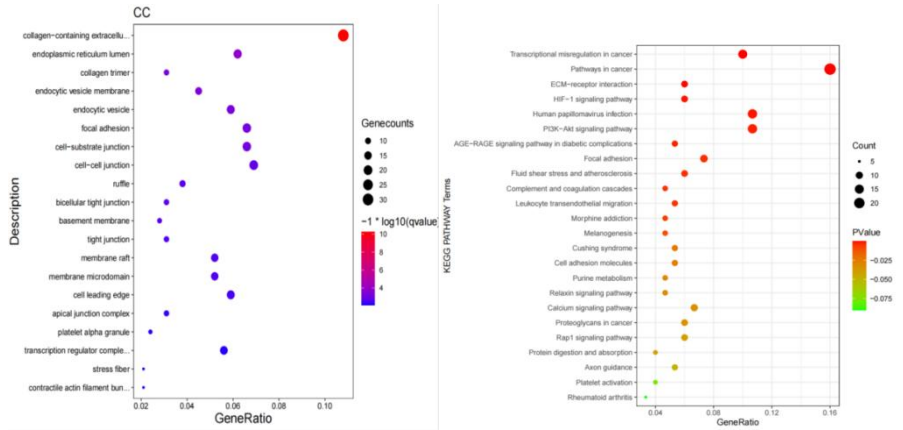


C D

Figure4.Use R language to enrich, analyze and visualize go and KEGG differential genes after the intersection of colloid and matrix (method: clusterprofiler package）

(A). pathway through which differential genes are enriched in molecular functions(MF).(B) pathway through which differential genes are enriched in biological processes(BP).(C) pathway through which differential genes are enriched in cellular components(CC).(D)Kyoto Encyclopedia of Genes and Genomes

*PPI Network Construction and Module Analysis.*Protein-Protein Interaction (PPI) Network Construction and Module Analysis. STRING (https://string-db.org/) can draw PPI networks after importing common DEGs into search tools to retrieve interacting genes [10]. First, we drew the PPI network diagram of DEGs by using the STRING website. Cytoscape, a free visualization software, was applied to visualize PPI networks and find hub genes [11]. Then, the hub genes were identified by four methods: DEGREE, MCC, DMNC, and MNC in cytoHubba [12].

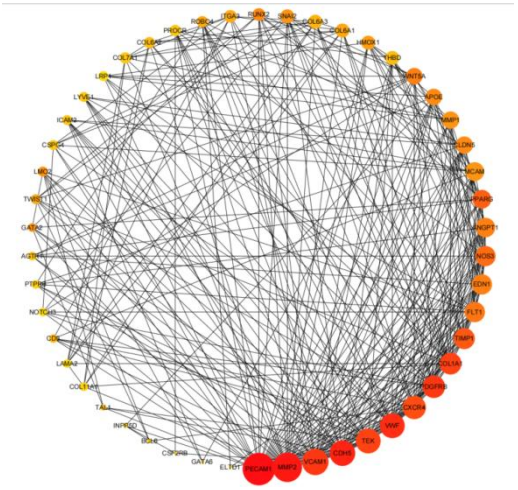


Figure5.Differential genes PPI protein protein interaction network shows the diagram of the top 50 of degree.

*Hub Genes Selection hub.*Gene selection uses a Cytoscape plug-in to identify hub proteins or genes in the PPI network. Using the five algorithms of closeness, degree, EPC, MCC and stress in Cytoscape to obtain the intersection[13], 16 hub genes are obtained; And do enrichment analysis of hub genes.

*Receiver operating characteristic (ROC) curves.*Receiver operating characteristic (ROC) analysis is a tool used to describe the discrimination accuracy of a diagnostic test or prediction model.[14]

Result

*Identification of DEGs in glioma.*We found the differentially expressed genes on chromosomes of glioma cells through the R studio . R studio was used to investigate the DEGs via mining of the GEO (GSE137902) database (https://www.ncbi.nlm.nih.gov/geo/). We analysed the DEGs in the database and showed them in a heat map and a volcano map. The data were filtered by logFC > 2or<–2 and P< 0.05. .e overlapping DEGs among the 2 datasets were identified, and 309genes were selected and presented using a Venn diagram.

*Gene and pathway enrichment analysis.*GO and KEGG Pathway Analysis.We performed GO analysis through the DAVID website and visualized the data with the R language. Concerning biological processes (BPs), the DEGs were enriched in response to oxygen levels, regulation of vascular permeab, muscle cell proliferation and wound healing .The changes in cellular components (CCs) were significantly enriched in the Collagen-containing extracellues, microvillus, platelet alpha granule and endoplasmic reticulum lumen. The changes in molecular function (MF) were significantly enriched in the platelet-derived growth factor binding, protease binding and growth factor binding.

*Investigation of Glioma hub genes by PPI network analysis.*The identified DEG is submitted to the string database to obtain PPI data. We use Cytoscape 3.6.1 to build a PPI network, and then display the top 50 network diagrams and three

MCODEs in the PPI network. To verify the hub genes related to glioma, we use five algorithms in Cytoscape: proximity, degree, EPC, MCC, and stress to intersect, and obtain hub genes (Cytospace software plug-ins) for determination[15]. All hub genes are MCC, ANGPT1, PECAM1, EDN1, PPARG, VWF, CXCR4, CDH5, TEK, VCAM1, COL1A1, APOE, PDGFRB, HMOX1, TIMP1, CLDN5.

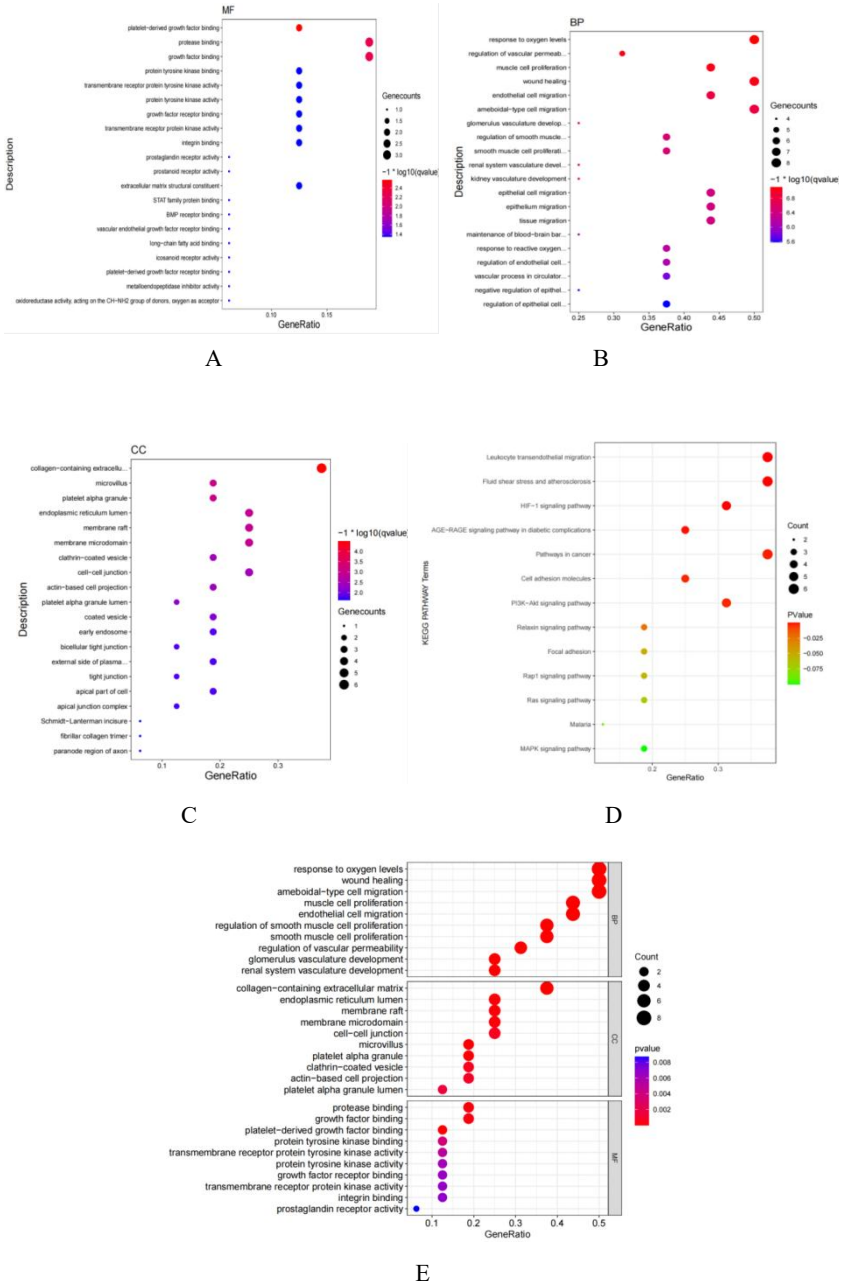


Figure 6. Use R language to enrich, analyze and visualize go and KEGG Hub genes after the intersection of colloid and matrix (method: clusterprofiler package ） (A). pathway through which differential genes are enriched in molecular functions(MF).(B) pathway through which differential genes are enriched in biological processes(BP).(C) pathway through which differential genes are enriched in cellular components(CC).(D)Kyoto Encyclopedia of Genes and Genomes.(E) MF,BP,CC,enrichent of related top ten GO barplot.

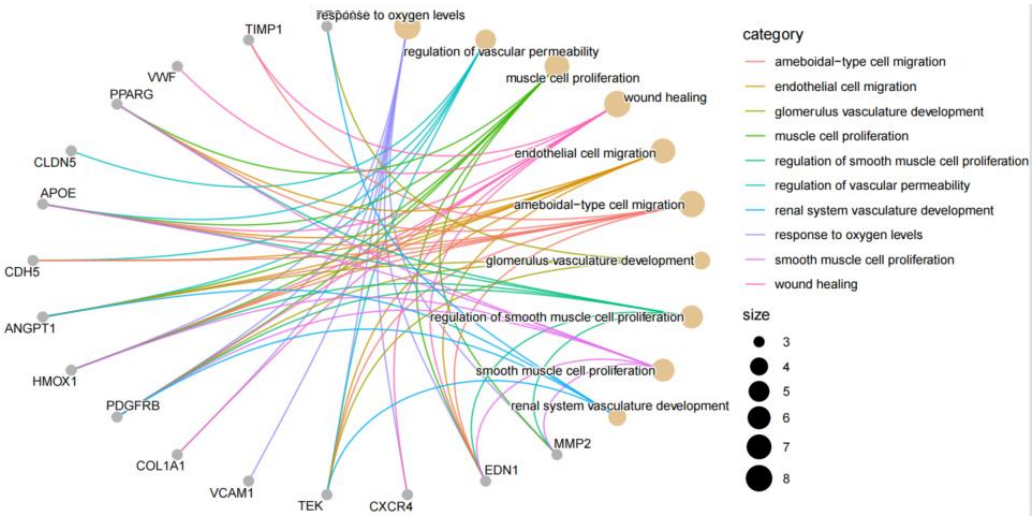
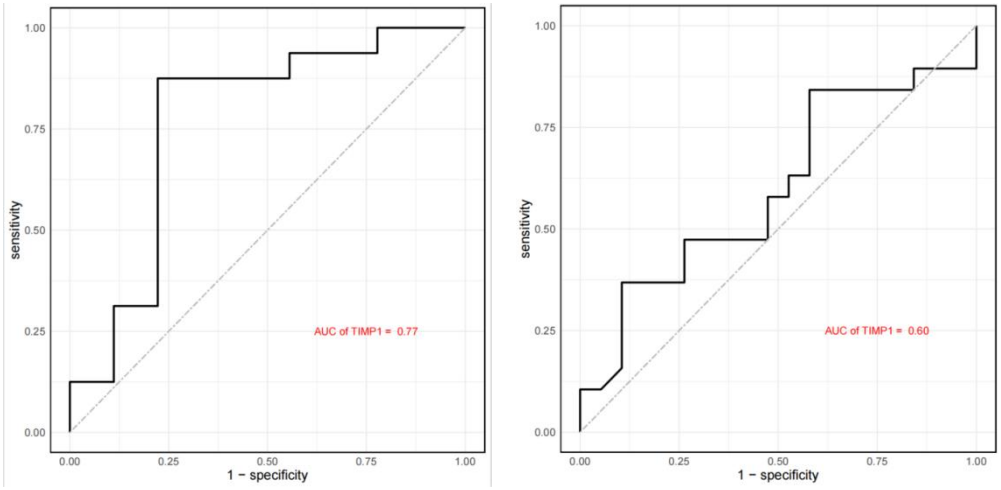


Figure7.Visualization network after GO enrichment analysis

*Verification of hub gene.*In this study, we downloaded the original microarray datasets GSE117423, GSE188256, and GSE90598 from NCBI GEO. Standardize the three datasets, with logFC>0.5 and p.value<0.05 taking differential genes, and obtain 440 DEGs, including 203 down-regulated genes and 237 up-regulated genes. These differential genes intersect with the hub gene, and TIMP1 has been identified as a key gene.

Finally, TIMP1 was verified in the ROC curve, with AUC>0.5 and true positive rate>0.5 for TIMP1. TIMP1 is a key gene associated with glioma that crosses the GSE188256 and GSE90598 data sets.



A B

Figure 8.(A) ROC of TIMP1 in GSE137902 was verified in GSE90598 .(B) ROC of TIMP1 in GSE137902 was verified in GSE188256.

Discussion

In this study, 423 down-regulated genes, 398 up-regulated genes, 216 down-regulated genes and 237 up-regulated genes were identified by gse137902 gelatin and matrix respectively. 309 differential genes were obtained from the intersection of the two differential genes. Using R language to analyze go and KEGG enrichment analysis of differential genes, it can be seen that DEGs are mainly enriched in BP, CC, MF. See the following figure for relevant roads. TIMP1[16] gene has been identified as a central gene that may affect the origin and development of glioma, and three pathways have been identified as potential key pathways in glioma.

Like other tumors, glioma is also caused by the interaction between congenital genetic high-risk factors and environmental carcinogens[17]. Some known genetic diseases, such as neurofibromatosis (type I) and tuberculous sclerosis, are genetic predisposing factors of glioma. Patients with these diseases have a much higher chance of glioma than the general population.

Through PPI network analysis, we identified the top 10 Central genes that may affect glioma. According to the interaction score calculated by cytohubba, peacam1, MMP2, vcm1 and cdh5 play an important role[18].

Hub genes are obtained by taking the intersection of five algorithms in Cytoscape: closeness, degree, EPC, MCC and stress. These differential genes are mainly enriched in BP, CC and MF, among which protease binding and growth factor binding are enriched in MF. Collagen containing extractable is enriched in CC. Response to oxygen lever is enriched in BP.[19]

Through the intersection of hub genes and GSE117423 (the overall gene expression profile of human glioma tissue and adjacent normal tissue samples, 6 gliomas and 6 normal tissues), TIMP1 is the key gene. And take the ROC of TIMP1 in GSE137902; It is verified in GSE188256 and GSE90598 respectively, and a conclusion is drawn.There are some limitations in the present study.

Conclusion

In conclusion, the DEGs, hub genes and signal pathways found in this study can confirm that the key gene TIMP1 is closely related to the occurrence and evolution of glioma[20]. We continue to study the underlying mechanisms by using bioinformatics. Findings of this study may provide candidate targets for the diagnosis and treatment of glioma.

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Application of Artificial Intelligence Technology in Radiotherapy to Delineate Endangered Organs

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Abstract: With the development of science and technology, artificial intelligence technology has been tried to be applied to all aspects of tumor radiotherapy, including respiratory motion prediction during simulated positioning, delineation of dangerous organs and tumor targets, and prediction of dose distribution. At present, clinical radiotherapy is mainly used in the automatic delineation of endangered organs, and artificial intelligence has demonstrated high accuracy in the delineation of dangerous organs, but there are also certain limitations. This article reviews the application and shortcomings of artificial systems in the automatic delineation of dangerous organs.

Keywords: Artificial Intelligence; Machine Learning; Radiation Therapy; Endangers Organs

1. Introduction

Since the concept of artificial intelligence was first proposed in 1956 [1], the development of artificial intelligence has gone through twists and turns, and now it has developed rapidly and has been widely used. AI technology has been initially applied to various fields of medical health, such as medical image analysis, medical pathology diagnosis, disease prediction, and research and development of new drugs. This article will focus on the application status and shortcomings of AI in the field of tumor radiotherapy.

2. Application of artificial intelligence in radiotherapy to automatically delineate dangerous organs

2.1 Head and neck endanger organs

Head and neck tumors, especially patients with nasopharyngeal carcinoma, have complex tumor target shapes, many surrounding dangerous organ structures, and most of the dangerous organs are small and irregular in shape, which is relatively difficult to delineate and delineate organs, and the delineation work will be more cumbersome and time-consuming. According to statistics, the manual delineation time of head and neck dangerous organs ranged from 2~3 h. The automatic delineation time is basically nearly 60 s/patient. Automatic sketching greatly improves work efficiency [2]. Some scholars developed an automatic delineation of dangerous organs software based on deep learning to automatically segment the dangerous organs of 185 nasopharyngeal cancer patients, and the results showed that the brainstem (0.896±0.03), eyeball (0.934±0.04), lens (0.836±0.07), larynx (0.87±0.04), mandible (0.913±0.04), oral cavity (0.928±0.03), mastoid (0.823±0.06), spinal cord (0.884± DICE coefficients were high in 0.07), parotid gland (0.851±0.05), temporomandibular joint (0.845±0.05), and optic nerve (0.689±0.1) all [3]. Some scholars used AccuContour software to automatically delineate 18 dangerous organs of the head and neck and compare them with the OARs manually sketched on the CT-MR fusion image, and the results showed that the smallest OARs of DSC were optic chiasm, the mean was 0.66, and the rest of the mean was greater than 0.85, the DSC of the pituitary gland was 0.871±0.113, the DSC of the thyroid gland was 0.969±0.019, and the largest HD

value was the brain. The mean value was 10.1 mm, the pituitary HD value was 1.354±1.203, and the thyroid HD value was 3.266±0.232, which showed that there was a moderate positive correlation between HD and OARs size, and AccuContour software had good accuracy and repeatability for the delineation of head and neck dangerous organs [4]. However, the automatic delineation software shows certain limitations for the automatic delineation of small organs in the head and neck, so some scholars propose a 3D encoding-decoding network based on a classification model, which can divide the original CT image into 6 parts in the head and foot direction, and then put the classified different dangerous organs into the corresponding 3D encoding-decoding segmentation network. The DSC values of small volume structures such as crystal, optic nerve and optic chiasm automatically depicted by classification model and 3D segmentation network were 0.75, 0.84 and 0.82, respectively, indicating that the network has clinical use value [5].

2.2 The chest endangers organs

Zhang Song [6] pointed out that the clinical compliance rate of automatic sketching can meet the effectiveness of clinical sketching function if it reaches 85%. Studies have shown that generally DSC > 0.7 and HD<20 indicate a high degree of coincidence between the two structures [7]. Some scholars have discussed the feasibility of AI for automatic delineation of esophageal cancer, in which it takes at least 25 minutes to manually delineate all endangered organs, while the total time of the automatic delineation process is only 2~3 minutes, which greatly improves the efficiency of physicians. The similarity coefficient DSC values of the heart, liver, and spinal cord shape similarities of auto-sketching and manual sketching (gold standard) were all > 0.9, and the left lung > 0.86 and the right lung > 0.78 were higher than the standard of 0.7 [8]. Verification shows that there is good overlap and consistency between automatic and manual sketching. Some scholars used AccuContour software to automatically delineate the chest tumor danger organs, and the results showed that among the mean Hausdorff distances (standard deviation) of the lungs, heart and spinal cord, the largest was (22.31±4.50) mm in the right lung and the smallest was (3.17±0.80) mm in the spinal cord. The DSC values for OAR are ≥ 0.91, with DSCs as high as 0.98±0.01 in the left and right lungs, 0.92±0.02 in the spinal cord, and 0.91±0.03 in the heart [9]. However, some scholars [10] used deep convolutional networks to automatically segment the esophagus, and the results showed that the DSC was 0.726±0.094 and the HD95 was 8.714±10.588 mm, which was lower than that of other chest organs.

2.3 The abdomen endangers the organs

The main organs in the middle and upper abdomen are large-volume organs with small shape changes and clear boundaries, as well as organs with large shape variation and poor tissue contrast, such as stomach and pancreas. For structures with large shape variation and poor tissue contrast, such as the automatic segmentation of stomach and pancreas, Wang Linjing et al. [11] pointed out that automatic sketching software is difficult to meet basic clinical needs. However, studies have shown that the mean DSC of the stomach and pancreatic structures delineated by AccuContour software > 0.7, which coincides well with manual sketching [12]. A 2.5D UNet network model combining deep supervision of probability maps (CSNet) has been proposed to segment the pancreas, and experiments have shown that this method is superior to the traditional UNet segmentation method, and the DSC value can reach (83.74±5.27)% [13]. For large structures with clear boundaries such as liver, kidney and spinal cord, some scholars use three automatic sketching software for automatic sketching, all of which have good delineation effects, and their DSC mean values are greater than 0.8 [12]. Qin Wei et al. used AccuContour software to delineate the two gastric structures, and the results showed that the volume difference V% of normal stomach was (−1.82 ± 9.65%), the total position difference ΔL was (0.51 ±0.37) cm, and the shape consistency DSC value was 0.89 ± 0.04[14]. These data show that the AccuContour software has a good automatic sketching effect on normal stomachs. At the same time, the study also pointed out that the fullness of the stomach will affect the effect of automatic delineation, and for smaller stomachs, the automatic delineation results are not good. Some researchers evaluated the accuracy and efficiency of automatic segmentation of cascaded deep convolutional neural network VB-Net on the stomach and pancreas in 248 cases including enhanced CT and non-enhanced CT, and the results showed that the average DSC values

of automatic segmentation of gastric and pancreas based on non-enhanced CT were 87.93% and 80.05%, respectively. The average DSC values of gastric and pancreatic auto-segmentation based on contrast-enhanced CT in the pancreatic phase were 89.71% and 84.79%, respectively. The VB-Net model is more accurate for the results of the gastric and pancreatic automatic segmentation model, and greatly improves the efficiency of organ segmentation [13].

2.4 The pelvis and other dangerous organs

Wang Jinyuan et al. [14] used Atlas template library to automatically delineate cervical cancer-threatening organs, and the results showed that the automatic delineation effect on the rectum was not good, and the DSC value was about 0.5. In order to solve the problem of automatic segmentation of organs with large differences in volume such as intestine and bladder, some scholars proposed a deeply expanded convolutional network (DDCNN), which evaluated the data of 278 rectal cancer patients and compared the performance of DDCNN with U-Net. The results showed that the average DSC value of DDCNN was 3.8% higher than that of U-Net. The mean DSC values of DDCNN for the bladder, left femoral head, right femoral head, bowel and colon were 87.7%, 93.4%, 92.1%, 92.3%, 65.3%, and 61.8%, respectively. The system exhibits excellent performance and faster speed for segmentation of the bladder, left and right femoral heads, colon, and intestine in 45 seconds per patient, but still lacks in automatic segmentation of the intestine[15]. Some studies have evaluated the feasibility of using 3D U-Net deep learning model to automatically segment pelvic tissue structure based on pelvic T2WI. The pelvic organs of 147 patients with prostate disease were automatically segmented, including prostate, bladder, rectum, bilateral seminal vesicles, urethra, bilateral obturator internal muscles and bilateral puborectal muscles. The results showed that the DSC of all structures of the pelvic cavity in the 3D U-Net model was > 0.90, among which the bladder was 0.96 (0.95, 0.97) and the rectum was 0.95 (0.92, 0.96). At the same time, there was no significant difference between the volume of pelvic structures segmented by the 3D U-Net model and manual labeling ($P>0.05$) [16]. The 3D U-Net DL model demonstrated high accuracy in the automatic segmentation of pelvic soft tissue structures shown by T2WI.

2.5 Opportunities and challenges

Although AI technology has demonstrated high accuracy in endangering automatic segmentation of organs, there are several unsolved challenges in applying AI to clinical practice. We highlight the following key issues: data volume, data quality, and performance metrics. The need to build large databases in the medical field is a key challenge. AI requires a large number of training samples to be useful in clinical practice. This means that deep learning frameworks need to be trained with enough representative examples to make them more accurate and reliable in practice. In addition, there are differences between the outline of the OAR itself or the sketcher. Another challenge is training an auto-sketch model on a biased dataset, such as a different annotation of the input image, which will definitely produce biased results. With the clinical application of AI, many data-related challenges have emerged, the biggest of which is the lack of a large number of high-quality labeled datasets.

Comparisons between the output of automatic contouring software are often difficult. Previous studies have used a variety of metrics to quantitatively assess the consistency of automation and expert profiles.

These challenges provide several opportunities to improve research possibilities in the field and in the future. For example, individual profile variability can be addressed by standardizing established expert consensus guidelines to systematize the profile of OAR, and contour variability within and between physicians will further improve the accuracy of existing DL models. Automated segmentation of OAR should facilitate the adoption of international consensus guidelines across centers to produce more favorable and standardized routine clinical practice.

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An Experimental Study on the Effects of Deep Touch Pressure on Emotion Soothing

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Abstract: Stress, anxiety, and depression are normal reactions to a variety of stressors and have a detrimental effect on mental or physical well-being. An experimental study on the effects of deep touch pressure on emotion soothing was carried out. The study used an automated pressure vest and measured participants' vital signs and emotions before and after being exposed to a stressor. Secondly, an automatic pressure vest was used to explore the effects of deep touch pressure on emotion soothing. The State-Trait Anxiety Inventory, a self-rating anxiety scale, and electroencephalogram (EEG) readings measure deep touch pressure effects on anxiety reduction. The research found that the pressure vest helped to reduce stress and improve relaxation. It also found that the pressure vest induced a high theta in the prefrontal lobe of the brain, indicating that the participants became more relaxed. The study suggests that deep touch pressure may be an effective, non-pharmacological method for reducing stress, anxiety, and depression.

Keywords: Pressure Vest; Stress; Anxiety; Depression; Deep Pressure

Introduction

Stress is a common experience for humans and it can manifest in a variety of ways, including physical symptoms, emotional distress, and cognitive impairments. Stress is a normal response to certain situations, but chronic stress can lead to a wide range of health problems, including cardiovascular disease, mental health issues, and decreased immunity (S. Baez-Lugo, 2023) (D. B. O'Connor, J. F. Thayer, and K. Vedhara,2021). Deep pressure, which is the application of firm but gentle pressure to the body, has been shown to be an effective method for reducing stress in human beings(S. M. M. G. E. D. C. R. K. Edelson and G. Temple, 1999).

This study aims to present early thoughts and methods for implementing a simple, automated pressure vest for individuals with stress, depression, and anxiety disorders. The automatic pressure vest is designed and completed using the knowledge of the effects of deep touch pressure on human emotions and psychology, pulse sensors, pressure sensors, miniature air pumps, air valves, pressure vest, and Arduino microcontroller-related knowledge. We began by studying how to monitor heart rate signals using simple logical control to develop an algorithm. Furthermore, given the dynamic nature of human systems, there are a multitude of reasons why users or therapists may find pressure vests beneficial. This study aims to see how deep touch pressure affects emotion soothing.

Experimental Considerations

Volunteers

Adults who were enrolled in or who were employed at Jiangsu University were among the participants in the experiment. As a result, the study carried at least 11 volunteers in total.

Data Collecting Instruments

Data collection involves accumulating and measuring statistics systematically, which simplifies hypothesis testing and

the effective answering of the research questions on variables of interest(S. Muhammad and K. Sajjad, 2016). Vital sign machines were used to gather the required data. Blood oxygen saturation and heart rate were measured using a pulse oximeter. Blood pressure was measured using a digital blood pressure machine.

Experiment Apparatus

A pulse oximeter was used to measure pulse rates. Pulse rate is essential as a measure of anxiety and to assure patient safety. The State-Trait Anxiety Inventory for Adults is a shorter version of the STAI with outstanding psychometric characteristics, reliability, and validity. The State-Trait Anxiety Inventory for Adults was employed for this investigation since the lengthier version was deemed unsuitable in this situation. The shorter version produces comparable results to the more extended version and is still responsive to variations in state anxiety. An individual's total state anxiety score is calculated, with a higher number indicating anxiety.

Experiment Procedure

The participants were given a brief explanation of the research design and consent form, and if they chose to participate in the study, they signed and retained a copy of the paper. The information was gathered in two methods. In the patient's chart, one copy was kept. The duplicate was given a number, either even or odd, based on the sequence in which they arrived at the event. The gender and age of each participant were recorded. The voluntary participation document provided an overview of the investigation's equipment and techniques and the potential issues of participating in the study. Individual briefings of the experiment's protocols were given to each volunteer prior to the start of the session. The chance for participants to ask questions was provided, and they had their doubts cleared before signing the voluntary participation form. The individual's pulse rate, blood pressure, blood oxygen saturation, and EEG were all observed and recorded. The participants were asked 20 questions from the State-Trait Anxiety Inventory for Adults. Their responses were recorded both before and after each session, and they took a self-anxiety evaluation survey at the end. All participants took part in two test sessions, one with an automated pressure vest and one without, which functioned as the control experiment. 8-minute time intervals with and without the automated pressure vest were used for this experimental study. To counter the order effect, volunteers participated in the experiment with or without the vest depending on the order of the number they came for the participation that is either an even or odd number participation sequence was employed. Depending on which experiment they started with, volunteers watched an emotional video to help trigger an emotional response, after which the vest was inflated, or they relaxed without the vest being inflated. Before and after each experiment, vital signs were recorded, as well as a State-Trait Anxiety Inventory for Adults survey. During each experiment, EEG and heart rate were continuously recorded. Between testing sessions, volunteers were given a five-minute break during which their vital signs were collected and they were asked to complete a State-Trait Anxiety Inventory for Adults survey. The researchers were present the entire time, and the automatic pressure vest remained in place. For consistency, blood pressure, heart rate, and blood oxygen saturation were taken on the left side, while EEG was recorded simultaneously. A data-recording protocol manual was used to organise data collection and ensure that all participants' data acquisition was uniform throughout the research.

Results And Analysis

State-Trait Anxiety Inventory (Stai) Interpretation

One of the most prominent traits and state anxiety measures is the State-Trait Anxiety Inventory (STAI). Diagnoses of anxiety and the distinction between it and depressive disorders can be made in clinical settings by using this test. Each participant's self-rating anxiety before and after treatment was examined using data gathered from the State-Trait Anxiety Inventory for Adults. It may be determined if the usage of the automated pressure vest has a more significant impact on self-perceived anxiety by comparing the findings of a short form of the State-Trait Anxiety Inventory for Adults (Short Form). Exit survey responses and scores from the State-Trait Anxiety Inventory for Adults (Short Form) are used to determine if there was an ordering effect during the experiment. Higher scores are associated with greater levels of anxiety.

On average, people who used the vest scored worse than those who did not use it.

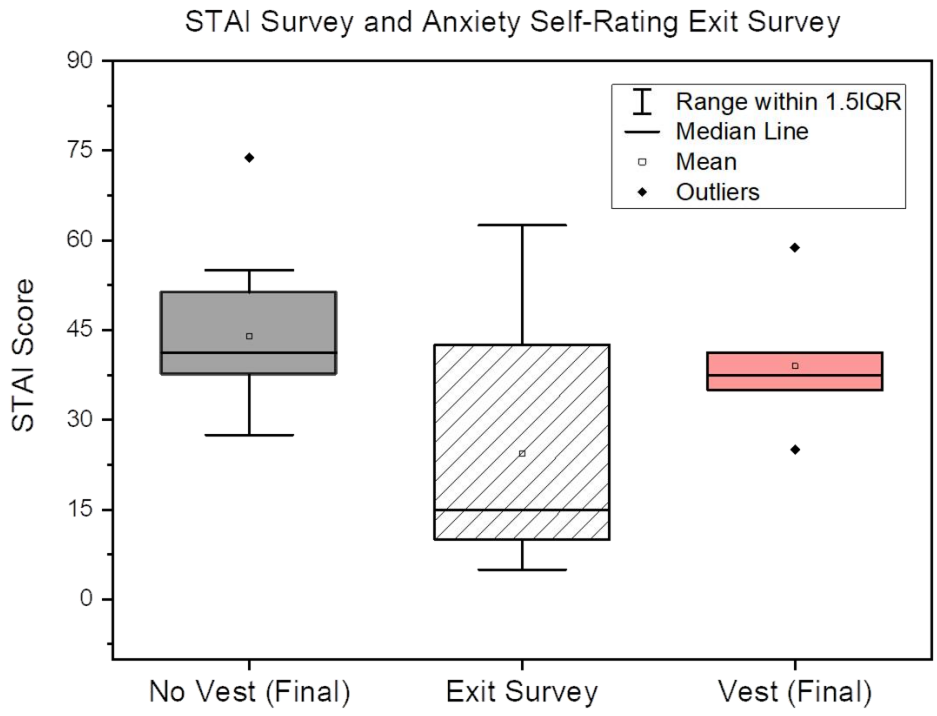

Figure 1. STAI And Exit Survey Box and Whisker Plot

All values were changed to percentages for easy calculations and comparison. The mean value for the therapy without the pressure vest is 43.97727273 and for the experiment with the pressure vest is 38.97727273. However, the mean value of the exit survey is very low compared to the STAI final survey of the therapy and the control experiment as shown in figure 1. A paired t-test was taken between the final STAI final of the investigation with the vest and without the vest to evaluate whether there was an ordering effect. Using alpha as 0.01, P(T<=t) two-tail=0.019800271 between the control and the exit survey, P(T<=t) two-tail=0.151032494 between the therapy with the vest and the control. In these two sets of calculations, there was no significant ordering effect between the tested parameters. P(T<=t) two-tail=0.001636719 between the therapy with the vest and exit survey signifying an order effect.

This was possibly due to carryover effects in which the participants may have to respond to the experiment due to repetition of the procedure either with or without the vest. In this experiment which involved repeated measurements of the same individuals, one or more order effects was expected to appear. The order effects skew the results, as shown in the box and whisker plot. A relatively more significant portion of the participants had a relatively high anxiety score after the control experiment with vest than in the therapy. A Pearson R statistical test was conducted, which measures the strength between the different variables and their relationships. Pearson Correlation=0.559563671 between the survey after the experiment with the vest and the exit survey and the survey after the control experiment and the exit Pearson Correlation=0.682352099 all of which are relatively high absolute values of the correlation coefficient, which indicates a stronger relationship between surveys.

BLOOD PRESSURE (BP)

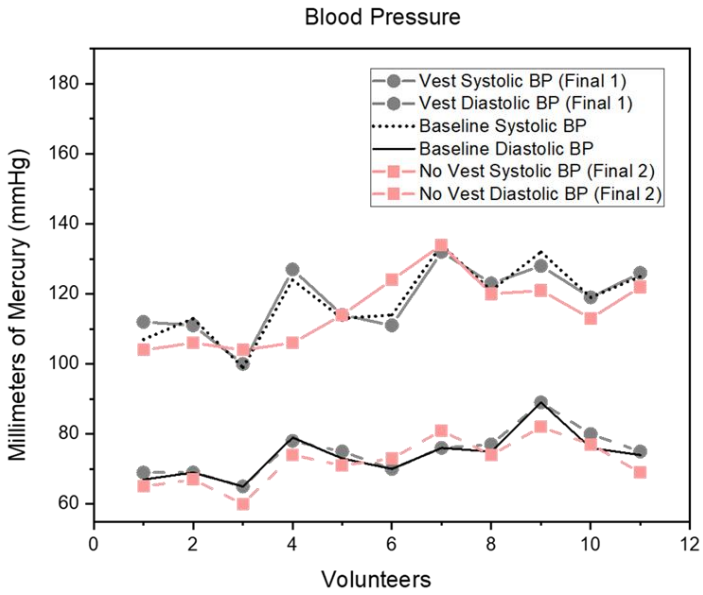

Figure 2. Blood Pressure-Line graph

Due to different reasons, the participants had generally high, average, or low blood pressure. In order to test a reasonably good comparison of the participant's blood pressure, three sets of blood pressure, namely the baseline, which was taken from the initial blood pressure readings of the control experiment, the final readings of the therapy session with the vest and the final readings of the control experiment. The line graph (figure 2) shows that the vest was not one of the reasons for either low or high blood pressure. Therefore, to further ascertain this conclusion, we implored a paired t-test between the baseline and the final blood pressure readings of the therapy session with the vest.

Alpha as 0.05 P(T<=t) two-tail=0.828613681 for systolic blood pressure and P(T<=t) two-tail=0.063645884 for diastolic blood pressure, both of which are greater than 0.05; therefore, we concluded that there is no evidence that the vest caused either high or low blood pressure in participants. Other variables may have contributed to the high or low blood pressure, such as anxiety due to the experiment or the high amount of caffeine.

In conclusion, the results acquired from the three separate vital sign tests suggest that the usage of the automated pressure vest did not lead the subjects to enter a dangerous physiological range. All 11 participants' SpO2 levels remained over 95%, and their pulse rates remained below 100 beats per minute.

Feature Selection And Extraction

The primary goal of the research is to determine the relationship between EEG and deep pressure. This relationship may be employed in everyday situations to assist individuals in need of deep pressure. Selecting appropriate brain areas and bands was critical since a 62-channel electrode cap is not suitable for this purpose. The fundamental goal of feature extraction is to find the most important elements that may be used to map EEG data to emotional states. The Fourier transform (Welch approach) was used to translate time domain information into frequency domain information. The power spectrum of all sub-epochs within each epoch was then averaged to reduce EEG artifacts in all sub-windows. Finally, the EEG log power spectrum was extracted into several frequency bands, including delta, theta, alpha, beta, and gamma(S. M. Alarcão and M. J.2019). . Since the sample rate was no longer 1000Hz, the data sampling rate was reduced to 250Hz, and each epoch had 500-time points. A 100 data point window, and a 50% window overlap were used. The Fast-Fourier Transform was set to 512. In the traditional way, neural oscillations were divided by frequency into theta (4-7Hz), alpha

(8-12Hz), beta (13-30Hz), and low-gamma bands (30-45Hz) (X. W. Wang,etc.,2011). Previous research has shown that neural oscillations in the frontal and parietal lobes are associated with relaxed emotions. Therefore, the regions of interest (ROI) were set as the frontal and parietal lobes. The F1, Fz, F2, AFz, and FCz electrodes were selected as frontal lobe ROI. P1, Pz, P2, CPz, and POz electrodes were selected as parietal ROI. The average power of ROI channels was compared between the two groups.

Results

In both conditions, the power spectrum showed high power alpha-band activity. This was reasonable because, in both conditions, the subjects were resting in a relatively relaxed environment. A paired t-test was carried out on the two separate conditions, one with a pressure vest and the control without a pressure vest on the frontal ROI and parietal ROI on EEG delta, theta, alpha, beta, and gamma asymmetry values. T-test of paired samples showed that the theta power of the frontal lobe differed significantly between groups (p=0.0426).

Table 1. Statistical analysis of the two conditions on different lobes.

Table Analyzed	theta-PFC	theta-parietal	alpha-F7
Paired t test			
P value	0.0426	0.0304	0.031
P value summary	*	*	*
Significantly different (P < 0.05)?	Yes	Yes	Yes
One- or two-tailed P value?	Two-tailed	Two-tailed	Two-tailed
t, df	t=2.360, df=9	t=2.566, df=9	t=2.554, df=9
Number of pairs	10	10	10

Although no significant difference in theta in parietal ROI was found between groups, however, a significant difference (p=0.03) in theta power was found in the left parietal lobe (the mean power of CP3, CP5, P3, P5). Acknowledged as distinct theta activity on EEG in the frontal midline area, this activity implies mental focus as well as a contemplative state or anxiety reduction. The analysis of frontal alpha F7 EEG values revealed that there is a significant difference between the two conditions. Paired t-test p value=0.031, $p < 0.05$. In order to understand this interaction, separate analyses were conducted for each condition. The prefrontal lobe was associated with cognitive control, and alpha waves indicated relaxation or rest. These analyses revealed that alpha is concentrated in the occipital lobe under both conditions. However, there were subtle differences in their frontal lobes, suggesting the subjects were more relaxed in the second condition.

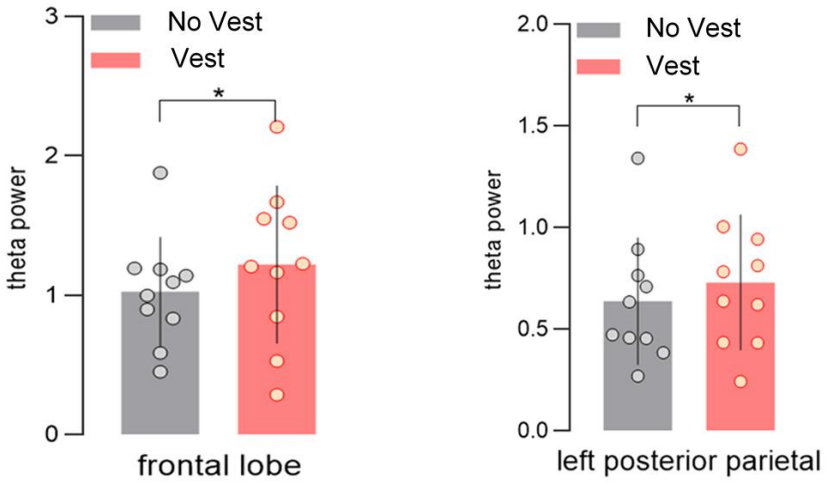

Figure 3. Theta power between groups (paired t-test)

The difference between the Theta oscillation in the prefrontal lobe and the left posterior parietal lobe was significant, as was mean power. Condition 2 induced a high theta in, for example, PFC compared with condition 1, therefore, leading to a conclusion that patients become more relaxed in the second condition.

According to our data analysis, the frontal and parietal lobes are the most informative regarding emotional states, alpha, gamma, and theta waves proved to be the most discriminative. The frontal mid-line theta rhythm, which is identified on EEG as unique theta activity in the frontal mid-line region, shows mental attention as well as a contemplative state or anxiety reduction. Theta waves in the prefrontal lobe and alpha waves in the posterior parietal lobe and occipital lobe were found during meditation, meaning that sitting quietly may immediately bring the body and mind back to their most harmonious, relaxed state(J. Lagopoulos.2009). This, therefore, explains why the participants were relaxed in both conditions, with theta differentiating the relaxed conditions (Figure 3).

Conclusion

Overall, it was concluded that using an automated pressure vest to apply deep touch pressure can help reduce stress, anxiety, and depression, offering a novel, non-pharmacological, and complimentary way to calm emotions. Possible limits were outlined as well as future studies while highlighting our findings in the context of professional practice. This study provides direction and purpose to researchers who want to conduct future research on the evaluation of a clinically viable therapy method. Further research on the use of a pressure vest with people who have high levels of anxiety is needed. More research into the possibility of developing new technologies for remote sensing of anxiety, as well as novel deep pressure devices adapted to individual needs and preferences, may be needed in the future.

Ethical Approval

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of Xuzhou Central Hospital (protocol code XZXY-LJ-20210513-054 and May 13rd, 2021). Informed consent was obtained from all subjects involved in the study.

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The Effect of Hypertriglyceridemia on the Development of Acute Pancreatitis and the Extent of Its Pathological Damage

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Abstract: This paper investigates the effect of hypertriglyceridemia on the development of acute pancreatitis and the extent of its pathological damage. It was found that hypertriglyceridemia has a significant correlation with the development of acute pancreatitis, and it may trigger acute pancreatitis by increasing blood viscosity and affecting microcirculation, leading to a decrease in pancreatic blood flow, which puts the pancreatic cells in a state of ischaemia and hypoxia. At the same time, hypertriglyceridemia can also affect the lipid metabolism and immune function of the pancreas, aggravating the progression of the disease and pathological damage. The influence of hypertriglyceridemia on the course of acute pancreatitis and the degree of pathological damage was confirmed through the analysis of specific clinical cases. On this basis, the possible mechanisms of hypertriglyceridemia on the degree of pathological damage in acute pancreatitis were explored, and possible mechanisms were proposed to affect the blood supply to the pancreas, to disrupt the balance of lipid metabolism in the pancreas, to affect the function of the immune system, and to directly affect the accumulation of pancreatic fluids and digestion.

Keywords: Hypertriglyceridemia; Acute Pancreatitis; Pathological Damage; Lipid Metabolism

1. Overview of hypertriglyceridemia and acute pancreatitis

Hypertriglyceridemia and acute pancreatitis are two common clinical conditions. In this section, the basics and features of both diseases are first outlined. Hypertriglyceridemia refers to high levels of triglycerides in the blood, usually due to the body's inability to break down fats efficiently, resulting in the accumulation of triglycerides in the blood. Common triggers of hypertriglyceridemia include obesity, diabetes mellitus, liver disease, hypothyroidism and poor diet. In terms of clinical symptoms, hypertriglyceridemia may not have obvious symptoms, but sometimes it may trigger symptoms such as chest pain and abdominal pain. Acute pancreatitis is a condition in which the pancreas becomes inflamed and causes the pancreatic tissue to digest itself. Common symptoms include severe abdominal pain, nausea, vomiting, and fever. Acute pancreatitis is usually triggered by gallbladder disease or excessive alcohol consumption, but in some patients, acute pancreatitis is triggered by hypertriglyceridemia. There is a link between hypertriglyceridemia and acute pancreatitis. In some clinical studies, it has been found that patients with hypertriglyceridemia are more likely to develop acute pancreatitis and tend to be more severely ill. Therefore, hypertriglyceridemia has been identified as one of the independent risk factors for acute pancreatitis.

2. The effect of hypertriglyceridemia on acute pancreatitis

2.1 Correlation between hypertriglyceridemia and acute pancreatitis

Before understanding the correlation between hypertriglyceridemia and acute pancreatitis, it is necessary to understand the basic characteristics of these two conditions. Hypertriglyceridemia is a common disorder of lipid metabolism manifested by plasma triglyceride levels above the normal range. On the other hand, acute pancreatitis is a condition characterised by

inflammation of the pancreas, mainly manifested by severe epigastric pain, nausea and vomiting. The relevance of hypertriglyceridemia to acute pancreatitis lies in the fact that hypertriglyceridemia may be an important cause of acute pancreatitis. Specifically, when plasma triglyceride levels are significantly elevated, they may activate pancreatic lipase in the pancreas, leading to excessive production of fatty acids. These fatty acids further stimulate the pancreas, triggering an inflammatory response that can lead to the development of acute pancreatitis. Data from clinical studies have also shown that patients with hypertriglyceridemia have a significantly increased risk of acute pancreatitis. In several epidemiological studies, the incidence of acute pancreatitis was much higher in hypertriglyceridemic patients compared to those with normal lipid levels. In addition, the impact on the severity and prognosis of acute pancreatitis is an important aspect of the association between hypertriglyceridemia and acute pancreatitis. It has been found that acute pancreatitis in hypertriglyceridemic patients often presents with a more severe course and is associated with higher complication rates and mortality.

2.2 Effect of hypertriglyceridemia on the development of acute pancreatitis

The impact of hypertriglyceridemia on the development of acute pancreatitis can be detailed in terms of both pathophysiological mechanisms and clinical manifestations. In terms of pathophysiological mechanisms, hypertriglyceridemia can increase the risk of acute pancreatitis. When plasma triglyceride levels are high, pancreatic lipase activity in the pancreas may be abnormally enhanced. This is because plasma triglycerides act as a substrate for pancreatic lipase, and excess substrate leads to overactivation of the enzyme, which triggers the process of self-digestion in the pancreas and produces an inflammatory response that culminates in acute pancreatitis. In addition, hypertriglyceridemia may lead to pancreatic microcirculatory disorders. High levels of triglycerides can lead to increased plasma viscosity, which further leads to pancreatic microcirculatory disturbances. Impaired pancreatic microcirculation may further exacerbate the inflammatory response in the pancreas and may trigger ischaemia and necrosis of pancreatic tissues, thereby exacerbating the severity of acute pancreatitis. From the clinical manifestations, hypertriglyceridemia is closely related to the development of acute pancreatitis. Numerous clinical studies have shown that patients with significantly elevated plasma triglyceride levels also have a significantly higher incidence of acute pancreatitis than those with normal lipid levels. This is because the pancreatic inhibitory mechanism of pancreatic lipase in hypertriglyceridemia patients may be disrupted, making the pancreas more susceptible to damage by pancreatic lipase overactivation.

2.3 The effect of hypertriglyceridemia on the course of acute pancreatitis

The influence of hypertriglyceridemia on the course of acute pancreatitis is mainly reflected in the severity of the disease, recurrence rate and treatment response. First, in terms of disease severity, hypertriglyceridemia can exacerbate acute pancreatitis. Elevated plasma triglyceride levels may trigger an inflammatory response within the pancreas, leading to pancreatic tissue damage. Severe pancreatic inflammatory reactions may lead to pancreatic necrosis, further increasing the patient's symptoms of pain, nausea, and vomiting, making the clinical manifestations of acute pancreatitis more severe. In addition, hypertriglyceridemia may also lead to pancreatic microcirculation disorder, aggravating the inflammatory reaction of the pancreas and increasing the severity of acute pancreatitis. Secondly, hypertriglyceridemia may affect the recurrence rate of acute pancreatitis. Because hypertriglyceridemia can trigger pancreatic inflammatory reaction, if patients do not get effective triglyceride control during treatment, acute pancreatitis may recur, which leads to recurrence of the disease process, making it more difficult to treat the disease. Furthermore, hypertriglyceridemia may affect the response to treatment of acute pancreatitis. Pancreatic tissues of hypertriglyceridemia patients may undergo some pathological changes, such as lipid deposition and inflammatory reaction, due to long-term effects of lipid metabolism disorders, and these changes may reduce the patient's response to treatment. Therefore, for patients with hypertriglyceridemia, in addition to the treatment of acute pancreatitis, plasma triglyceride levels need to be actively controlled to improve the therapeutic effect.

3. The effect of hypertriglyceridemia on the degree of pathological damage in acute pancreatitis

3.1 How hypertriglyceridemia aggravates the pathological damage of acute pancreatitis

How hypertriglyceridemia aggravates the pathological damage of acute pancreatitis can be explained in the following aspects. Firstly, it is through pancreatic self-digestion caused by overactivation of pancreatic lipase. Under normal conditions, pancreatic lipase produced by the pancreas is involved in the digestion of fats in the small intestine. However, when plasma levels of triglycerides are too high, pancreatic lipase may be overactivated within the pancreas, causing the pancreas to begin self-digestion, leading to an inflammatory response and tissue damage, resulting in acute pancreatitis. Secondly, hypertriglyceridemia may trigger pancreatic microcirculatory disorders. Elevated plasma triglyceride levels can increase blood viscosity, which in turn affects pancreatic microcirculation and may lead to ischaemia and hypoxia in pancreatic tissues, further aggravating the inflammatory response and tissue damage in the pancreas. Furthermore, hypertriglyceridemia can cause lipid metabolism disorders within the pancreas. Prolonged hypertriglyceridemia may lead to an imbalance of lipid metabolism within the pancreas, causing lipid accumulation within pancreatic cells, triggering lipotoxicity and damage to pancreatic cells, which may trigger or exacerbate acute pancreatitis. Finally, hypertriglyceridemia may affect the inflammatory response of the pancreas. Injury to the pancreas usually triggers an inflammatory response to repair damaged tissue. However, high levels of plasma triglycerides may over-activate the inflammatory response, allowing it to get out of control and exacerbate pancreatic injury.

3.2 Examples of clinical studies on hypertriglyceridemia and the extent of pathological damage in acute pancreatitis

In a clinical study published in Pancreatology 2022, Issue 6, a team of researchers from Stanford University conducted a detailed study of patients with acute pancreatitis that included patients with hypertriglyceridemia and patients with normal triglyceride levels. The study covered 200 patients with hypertriglyceridemia and 200 patients with acute pancreatitis with normal triglyceride levels. The results showed that the former had more severe acute pancreatitis, a longer recovery period and a more pronounced inflammatory response of the pancreatic tissue, which clearly indicates that hypertriglyceridemia increases the degree of pathological damage in acute pancreatitis.In another study from Peking Union Medical College Hospital, published in the 11th issue of the Chinese Journal of Gastroenterology in 2022, researchers analysed the correlation between plasma triglyceride levels and the severity of acute pancreatitis, the recurrence rate and the mortality rate of 300 patients with acute pancreatitis. The results showed that there was a significant positive correlation between triglyceride levels and the severity of acute pancreatitis, recurrence rate, and mortality, i.e., the higher the triglyceride level, the more severe the acute pancreatitis. In a study published in the first issue of the British Medical Journal 2023, a team of researchers from the University of Cambridge, UK, conducted a randomised controlled trial of hypertriglyceridemic patients with acute pancreatitis. They divided hypertriglyceridemia patients with acute pancreatitis into two groups, one of which was treated with standard pancreatitis therapy, and the other was treated for hypertriglyceridemia along with standard therapy. They found that in the group that was also treated for hypertriglyceridemia, the patients had a significantly less severe pancreatic inflammatory response, a shorter recovery time, and a significantly lower recurrence rate. These examples clearly demonstrate that hypertriglyceridemia has a clinically significant impact on the degree of pathological damage in acute pancreatitis. This reminds us that in clinical practice, we should pay attention to the management of hypertriglyceridemia patients, especially in the treatment of acute pancreatitis, the control of triglyceride levels should be paid attention to, in order to reduce the pathological damage of acute pancreatitis and improve the therapeutic effect.

3.3 Possible mechanisms of hypertriglyceridemia on the degree of pathological damage in acute pancreatitis

The possible mechanisms of hypertriglyceridemia on the degree of pathological damage of acute pancreatitis mainly involve the following aspects: 1. Hypertriglyceridemia causes increased blood viscosity, which affects microcirculation and leads to reduced blood flow to the pancreas. The pancreas is an organ that is highly dependent on blood flow, and a reduction in blood supply can put pancreatic cells in a state of ischaemia and hypoxia, contributing to their pathology.2. Hypertriglyceridaemia leads to an imbalance in lipid metabolism within the pancreas. Under normal circumstances, lipid metabolism in the pancreas is balanced, but hypertriglyceridemia will lead to a large number of triglycerides into the pancreas, triglycerides in the pancreatic cells are broken down by enzymes into toxic free fatty acids, these free fatty acids will cause intracellular inflammatory reaction and pancreatic cell autolysis.3. Hypertriglyceridemia will also affect the immune system function. Elevated plasma triglyceride levels affect the function of white blood cells and weaken the immune response, making the patient's ability to recover from pancreatitis weaker and further aggravating the condition.4. Hypertriglyceridemia may also be directly related to the pathogenesis of pancreatitis. Studies have found that hypertriglyceridemia causes stagnation of pancreatic fluid, leading to increased enzyme activity in the pancreatic fluid and enhanced digestion of the pancreatic fluid on its own, thus inducing pancreatitis.

4. Conclusion

Hypertriglyceridemia has an obvious correlation with the development of acute pancreatitis, and it may aggravate the disease progression and pathological damage of acute pancreatitis by affecting the blood supply of the pancreas, lipid metabolism, and immune function, as well as the accumulation of pancreatic fluid and its digestive action. Understanding these mechanisms is an important guide to a deeper understanding of the etiology and pathological mechanisms of acute pancreatitis and its treatment. Further clinical and experimental studies are necessary to confirm and deepen the understanding of these possible mechanisms.

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A Study on the Current Situation of Job Satisfaction of Teachers in Higher Medical Schools and Strategies

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Abstract: The job satisfaction of teachers in higher medical schools affects their work enthusiasm and effectiveness and the development of medical schools. Teachers' job satisfaction is related to their salary, performance appraisal system, work environment, etc. If teachers are not too satisfied with their work, then teachers will put dissatisfaction into the teaching process of education work, which will affect the progress of education work and create a sense of burnout that There is even a tendency to leave the profession. Therefore, higher medical schools should actively improve teachers' working environment, improve their treatment, increase their motivation and improve their job satisfaction.

Keywords: Higher Medical Schools; Teacher Job Satisfaction; Strategies

Introduction

Overseas research on teachers' job satisfaction is more frequent and has achieved fruitful results. In China, such research is still in the development stage, although there are relevant researches, however, further focus on the research field of teachers' job satisfaction in colleges and universities, it does not really highlight and reflect the characteristics of the research on teachers' job satisfaction in colleges and universities, and has no practical guidance significance to the management practice of colleges and universities, especially the research on teachers' satisfaction in colleges and universities lacks the research results with practical significance, and the research on teachers' satisfaction in colleges and universities in Henan Province is even more rare. The research on teachers' satisfaction in Henan higher medical schools is even more rare. In the economically developed regions of China's higher medical schools, the high level of education, the abundance of educational resources and the high level of students and teachers' schools make teachers' job satisfaction higher; in the less economically developed regions, such as Henan Province, there is still much room for improvement in educational development and cultural undertakings, which leads to schools not paying much attention to teachers and students, not paying attention to teachers' working conditions and job satisfaction, so that teachers do not treat their job satisfaction high . Analysing the causes of teacher satisfaction in higher medical schools in Henan Province can improve teachers' job satisfaction, improve their attitude and quality of work in medical education and lay a good foundation for the sustainable development of higher medical schools. (This paragraph highlights again the fact that research on teacher satisfaction in higher medical schools in Henan Province in particular is much less common)

1. The current state of teachers' job satisfaction

The satisfaction of medical teachers affects the smooth functioning of systems among the medical field and the development of medical schools. Job satisfaction refers to how teachers feel about the job itself, the work environment, work style, job income, and job stress. In specific jobs, job income, opportunities for advancement, professional recognition and interpersonal relationships are important factors in how people feel about their jobs[1] . In many medical schools, medical faculty with higher educational backgrounds, the less teaching tasks they undertake in their disciplines, the more articles and

research projects they publish, indicating that faculty with higher education and titles have heavy research tasks and high research pressure, leading them to work long hours and have less time off. Teachers with more class time have a heavy teaching load and teaching pressure, making it difficult to pursue further education opportunities and not having the spare time and energy to promote their titles. The more evaluation content increases their work pressure and reduces their work enthusiasm. The main reason for teachers to engage in research activities is that they want to improve their titles and increase their work income. A small number of teachers want to complete their work and pursue the value of academic research. Increasing teachers' job income affects teachers' enthusiasm and attitudes to their work, many teachers are dissatisfied with their current income and believe that their salary is disproportionate in a larger job, teachers want to increase their income levels, salary is an important factor in teacher stability, the choice of titles for teacher stipends, classes and titles is obvious, increasing teachers' salaries can increase teachers' job satisfaction, and if schools can achieve teachers' needs , teacher satisfaction will increase[2] .

2. Issues affecting teachers' job satisfaction

2.1 Incentive policies need to be improved

For teachers in higher medical schools, performance appraisal and salary and benefits are important and can serve the purpose of motivation to a certain extent. At present, the lack of effectiveness of the performance appraisal system in many higher medical institutions is one of the reasons for the low enthusiasm and job satisfaction of teachers. In practical application, the appraisal in teachers' minds is both time-consuming and ineffective, the development of examination forms cannot promote teachers' work, there is no clear expression of the appraisal criteria stipulated in the system, in general, most teachers can pass the examination and cannot play an incentive for teachers and discipline, title assessment and evaluation, it places more emphasis on scientific research and hinders teaching, this method of evaluation does not objectively reflect the work of teachers and it affects teachers' motivation[3] . Many teachers are not very satisfied with their salaries and benefits, and pay levels are not very high. The disconnect between pay and performance prevents teachers from being motivated and leads to low levels of job satisfaction.

2.2 The working environment needs to be improved

The working environment is important to teachers; higher medical teachers use a lot of equipment and computer software; school infrastructure, teachers, office conditions, and accessibility for teachers can affect teachers' job satisfaction, and there is much room for improvement in reducing the impact of these factors on teachers; the academic and research atmosphere, which is also a measure of satisfaction, and improving teachers' working environment and conditions can improve teachers' job satisfaction ; teachers in some universities have a low status in the administration, the administration has not developed a sense of service to teachers, and administrative processing and approval is inefficient, resulting in low administrative satisfaction among teachers; learning and training activities are an important opportunity for teacher development, and schools in general will provide opportunities for teachers to learn and expand their expertise, but some schools have fewer opportunities for learning and teachers have few opportunities to learn, making teachers difficult to learn and costs rise, leading to teachers' dissatisfaction with their jobs; the relationship between teachers and colleagues is also one of the factors influencing teachers' job satisfaction, with teachers' more professional work, heavy teaching tasks, high teaching pressure, and a lack of communication and cooperation between teaching and colleagues, leading to a relationship between colleagues; and with the gradual increase in the need for medical schools to conduct research, there are currently medical schools in which closed management and experimental Problems such as inadequate conditions restrict the development of scientific research; higher medical schools are unable to fully integrate the teaching resources of schools, hospitals and research institutes, resulting in a poor integration of medical teaching and research, which leads to medical schools not being able to better cultivate applied medical talents to serve society. In short, they put higher demands on

teachers' work, and the working environment, working conditions and salaries do not motivate and support teachers to improve their satisfaction with their jobs, resulting in gradual dissatisfaction with their jobs[4] . (This part of the medical school is not targeted enough, and can be added to the medical school teachers' research platforms and laboratory conditions, etc., and the poor integration of medical teaching and research)

3. Strategies to improve teachers' job satisfaction

3.1 Improving teacher incentive mechanisms

Medical schools should establish a sound and standardised performance appraisal system for teachers, by establishing an appraisal system that can fairly and objectively reflect the performance of teachers. Because of the special nature of the work of medical school teachers, the establishment of school performance appraisal system should be flexible, so that teachers can highlight their work in different jobs, positive teachers positive affirmation can also let teachers know their own work deficiencies, to help teachers improve their ability to work, thus promoting the work of teachers, improve teachers' job satisfaction[5] . Schools can establish salary and performance, salary system, efforts to help teachers to increase income, performance assessment to determine the amount of variable pay, increase the total salary of teachers, positive efforts to improve teachers' salary income, to stimulate teachers' enthusiasm for work, improve teachers' job satisfaction, to complete the work with a positive attitude to work.

3.2 Improving the working environment for teachers

The improvement of teachers' working conditions is multi-faceted. While improving teachers' working environment, schools can increase investment in research projects, create a positive atmosphere for academic exchanges and a good learning atmosphere for teachers and students in schools; schools should improve the work of administrative posts, increase administrative efficiency and approval efficiency, and actively implement humanised services so that administrative departments can play an active role in teaching and research; schools should provide a learning environment for teachers, promote professional capacity development, give teachers more opportunities for learning and development, and create convenient conditions for teachers to learn and improve; schools should also promote communication and cooperation among teachers to avoid the problem of knowledge islands; schools can recruit new teachers, improve the work system of teachers, help teachers to reduce the heavy teaching tasks, solve the problem of high teaching pressure, and reduce the workload of teachers.

Conclusion

Higher medical schools should make active efforts to improve the working environment for teachers to meet the needs of teachers, due to the lack of motivation and support for teachers, teachers are somewhat dissatisfied with their work, teachers are not satisfied with teaching can affect the education of teachers, but also make teachers burnout, and even the tendency to leave the profession, so schools should strive to improve the job satisfaction of teachers, so that teachers can be more enthusiastic about their work, and strive to improve all aspects of teachers' needs. Establish favourable conditions for teachers to grow and develop themselves and improve their job satisfaction.

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Fund project (project category, project number, project name): China Education Development Strategy Society Talent Development Professional Committee 2021-2022 General Topic,Project approval number: RCZWH2021009

2023 Henan Province Social Science Federation research project SKL-2023-9

Research Progress of Urinary Tract Infection Associated with Urinary Catheter in Urology

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Abstract: Urethral infections caused by catheters rank first in hospitals, while urethral infections caused by catheters dominate. In order to better understand and master urethral infections related to catheters in the urinary system, the author reviewed a large amount of relevant data to provide an overview of the epidemiology, pathogenesis, influencing factors, and prevention and treatment measures of their occurrence. The author hopes to provide valuable information on how to effectively prevent catheter-related urethral infections in clinical practice and how to improve the quality of nursing work.
Keywords: Catheter; Urinary; Prevention and Treatment

1. Introduction

Catheter-related urinary tract infection (CAUTI) is a type of urinary tract infection that arises within 48 hours after Catheter insertion or catheter removal[1]. The occurrence of CAUTI not only increases the morbidity, mortality, medical expenses, but also increases the number of hospital days for patients. Studies have shown that urinary tract infections account for the first place of nosocomial infections, among which indignant catheters are the most important pathogenic factors, and 70%-80% of urinary tract infections are related to urinary catheter-associated urinary tract infections. According to the data, if targeted prevention and control, 65-70% can be effectively prevented. The transformation of clinical evidence refers to the systematic transformation based on scientific basis, with teamwork as the core, to promote the continuous improvement of medical service quality. Although the work of evidence-based nursing in China has just begun, after reviewing a large number of relevant literatures, we can see that the research results on evidence-based nursing (including catheter) in recent years have become the third research hotspot after “syndromic nursing” and “perioperative nursing”. This article summarizes recent advances in practical measures of clinical care for adults

2. Mechanism of catheter-associated Urinary tract infection (CAUTI)

CAUTI is caused by the combination of three factors: catheter, bacteria and host. A large number of clinical trial results show that when inserting or leaving the catheter, due to different pressures, it will lead to tissue and pathological changes in the bladder, and damage to the bladder’s immune system, and in serious cases, there will be cell shedding, bladder edema, mucosal damage, and finally will spread to the kidney. In addition, long-term placement of the catheter can cause persistent inflammation of the skin mucosa. Among them, the catheter can cause chronic inflammation, affect the patient’s normal urination, and destroy the body’s immune barrier, leading to the colonization and proliferation of bacteria in the bladder. Recent animal studies have shown that the catheter-induced inflammatory response leads to the secretion of fibrinogen (Fibro blasts), which can then transfer to the bladder. Because of long-term mechanical stimulation, resulting in the rupture of the catheter, coupled with injury, resulting in a large amount of fibrinogen accumulation in the bladder, and when its concentration is increased, it is easy to lead to the colonization and proliferation of urinary system pathogens such as Escherichia coli, Enterococcus faecalis, Staphylococcus aureus, candida alba. Therefore, the catheter and the associated

inflammatory response will lead to changes in bladder homeostasis, creating conditions for bacterial “colonization”.

3. Preventive measures for catheter-associated urinary tract infections (CAUTI)

3.1 Shortening the indwelling catheter time

In different patients, the occurrence of CAUTI is related to the time of indwelling catheter. It has been reported in the literature that the chance of bacterial urinary tract infection increases by 6 times after being retained for more than 6 days, and the chance of bacterial urinary tract infection for more than 30 days reaches 100%. Since the early CAUTIBF formation can be reversed, early extubation can prevent the formation of CAUTIBF, thus achieving the purpose of preventing CAUTI.But now, many hospitals in our country have a large number of catheters, overdue use of the phenomenon. Therefore, in the actual work, the rationality of the timing of the indwelling urinary tube should be carefully analyzed, the duration of the indwelling urinary tube should be reduced as much as possible, and the catheter should be removed as soon as possible to reduce the risk of CAUTI. Extubation cue system is a new nursing method to prevent urinary tract infection caused by indwelling catheter. The system can accurately prompt the nurse to remove the catheter, prevent the nurse from forgetting the time to remove the catheter, and reduce urinary tract infection. The experiment indicated that the use of the CAUTI ICU indentable catheter extubation evaluation monitor can significantly reduce the mean catheter indenture time of patients and reduce the incidence of CAUTI. At present, nurse-led catheter removal has an impact on the nursing outcomes of patients with indentured catheterization, which is a preliminary attempt to professionalize and standardize nursing. Although there are still some controversies, we expect more studies to confirm the feasibility and safety of nurse-led catheter removal mode in the future[2].

3.2 Securing devices properly

Through the analysis of relevant data, the results show that different types of urinary catheter have different degrees of influence on urinary tract infection. If the choice is too large, it will be harmful to the patients’ urethra and bring more pressure to the patient’s bladder, thus giving the patient more living space. If the catheter is too thin, it is easy to cause the catheter to slip and leak urine. Therefore, the correct selection of the appropriate catheter is very important. However, at present, there is no unified norm and rule in clinical practice. In the future, we can carry out relevant research on the selection of catheter models to clarify how to provide a scientific basis for catheter models under these different factors, such as age, gender, disease, patient’s physical condition, urethral condition, previous history of catheter insertion, urine PH value, etc. In the selection of catheter materials, silica gel material is widely used at present. In recent years, due to the progress of science and technology and the continuous development of new medical materials, there have been some new types of tubes containing antibacterial agents and tubes containing bioactive substances. Studies at home and abroad have confirmed that urinary catheters containing silver compound furacillin have significant effect in reducing CAUTI, but there is also a risk of inducing drug resistance. Novel medical catheters containing antimicrobial peptides have been shown to have good anti-CAUti effects, but are still in the research and development stage, and more animal and clinical trials are needed to prove their effectiveness. After selecting the appropriate catheter, the catheter is fixed internally and externally. The results of this experiment showed that the occurrence and urine leakage rate of CAUTI could be effectively reduced by intra-femoral fixation from upper to lower than intra-femoral fixation. The incidence of CAUTI was significantly reduced ($P<0.05$) after the application of improved conventional fixation, that is, the use of transparent dressing, pressure fixation glue and thin edge band on the outside of the catheter. Therefore, it is suggested that in nursing, it should be improved and optimized as far as possible under the premise of ensuring safety and comfort. In addition, after using the catheter for a long time, it is best to avoid frequent replacement, because this will lead to the destruction of the closed drainage system, but also lead to increased contact with outside microorganisms.

3.3 Maintaining the hygiene of the urethral opening

In order to reduce the incidence of CAUTI, attention must be paid to the hygiene of the urethral opening. Some studies have shown that urethral infection in some patients is due to poor hygienic conditions around the urethral opening. In the relevant norms of our country, there are clear regulations that require patients to do a good job of cleaning the urethral opening every day. However, there is insufficient evidence to prove that urinary tract cleaning can effectively reduce the occurrence of CAUTI. After the investigation and the CAUTI meta-analysis， the conclusion is drawn:There was no significant difference in the prevention of CAUTI when using iodoprene disinfectant, chlorhexidine disinfectant, normal saline and sterile water to clean the urethral meatus, but chlorhexidine disinfectant had a better preventive effect. If it is in some patients with fecal incontinence, or severe patients, and in places with poor sanitary conditions, it is recommended to use chlorhexidine disinfectant to help patients clean and disinfect, so as to reduce the risk of CAUTI. According to expert opinion, for patients with indurating catheters, generally can not use disinfectant to disinfect the urethral orifice, otherwise it will cause damage to the urethral orifice. Patients can use clean water, soapy water, etc., to clean and clean the surface of the catheter and urethral orifice, and maintain local cleanliness and comfort. For patients with stool incontinence, Iodophor can be used to clean and disinfect the perineum, perianal and catheter surfaces. At the same time, traditional Chinese medicine cleaning solution has also been widely used. According to our study, perineal washing with heat-clearing and dampness-removing traditional Chinese medicine lotion has a good effect on preventing CAUTI and can improve the cleanliness of perineum without any side effects, which is much better than traditional iodor scrubbing[3].

4. Conclusion

Indwelling catheters are an important cause of urinary tract infections, and the duration of indwelling catheters and the presence of indwelling catheters are two independent risk factors for urinary tract infections. The use rate of urinary catheter is high, CAUTI is the first category of nosocomial infection, with high CAUTI and high drug resistance, which seriously affects the comfort and pain degree of patients. Therefore, on the basis of mastering the indications of CAUTI catheter placement, the prevention and control of CAUTI will become better. In order to reduce the incidence of catheter-associated urinary tract infections (CAUTI), it is necessary to adopt strict surgical indications, strict disinfection and avoid unnecessary surgery.

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Application of Electrochemical Sensor Based on the Reaction of Potassium Ferricyanide and Uric Acid in Uric Acid Detection

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Abstract: At present, the number of patients with hyperuricemia and gout in China is increasing year by year, and the demand for uric acid detection is increasing. In the current situation, a uric acid detection chip was designed based on the redox reaction between potassium ferricyanide and uric acid and the principle of electrochemical sensor, and the uric acid content was measured by the electrochemical detection chip and the software PSTrace5.8, and the error of the result was within ±10%. The method is low cost and high accuracy, which can provide a new technical means for uric acid detection.
Keywords: Electrochemical Sensor; Uric Acid Detection; Potassium Ferricyanide

1. Introduction Introduction

1.1 Current situation of hyperuricemia and gout in China

Uric acid (2,4,6 trihydroxypurine, uric acid. UA) is the end product of purine metabolism in the human body. Hyperuricemia is a metabolic abnormality syndrome caused by the disorder of purine metabolism, and it is called hyperuricemia when the blood uric acid level exceeds 420μmol/L on two different days in both men and women. Blood uric acid exceeding its saturation level in blood or tissue fluid can form and deposit sodium urate crystals locally in the joints, inducing local inflammatory reactions and tissue destruction, known as gout; it can be deposited in the kidneys, causing acute nephropathy, chronic interstitial nephritis or kidney stones, known as uric acid nephropathy. There is much evidence that hyperuricemia and gout are independent risk factors for chronic kidney disease, hypertension, cardiovascular disease and diabetes, and are independent predictors of premature death. Hyperuricemia and gout are systemic diseases with multisystemic involvement and have received a lot of attention from multiple disciplines, and their management also requires multidisciplinary involvement. According to relevant data, the prevalence of hyperuricemia ranges from 2.6% to 36% in different races, and the prevalence of gout ranges from 0.03% to 15.3%, with a significant increase and youthful trend in recent years. It has become another common metabolic disease after diabetes mellitus. According to the related survey, by 2022, the number of diagnosed hyperuricemia in China will be as high as 170 million, and the diagnosis rate will be more than 13.3% in some areas with heavy diets, so it is important to develop an accurate method to measure uric acid content for the health of the nation.

2. Main methods of measuring uric acid

Current methods commonly used for uric acid testing include phosphotungstic acid reduction, high performance liquid chromatography, spectrophotometric, enzymatic and uric acid sensor assays and microfluidic paper chip methods. Phosphotungstic acid reduction method is more mature, but it has the disadvantages of poor linearity, precipitation of uric acid and proteins, and susceptibility to interference by reducing substances: high performance liquid chromatography method has high precision, fast analysis, and low sample usage, but it has the disadvantages of pre-treatment of samples, finding suitable chromatographic conditions, and dependence on high precision instruments: spectrophotometric method is

easy and rapid to operate. However, the sensitivity is poor and it is difficult to measure the uric acid content in plasma directly: the advantages of enzymatic method are high specificity and mild action conditions, but its disadvantages of not easy to preserve and high acquisition cost also limit the application of the method; and the microfluidic paper chip method has good development prospects, has the advantages of convenient, fast, green and cheap, but at this stage of development technology is still immature. The uric acid detector method has become a popular method in the field of uric acid detection due to its high sensitivity, good selectivity and practicality. Therefore, this study is based on the uric acid sensing detector method, and the current generated by the redox reaction between potassium ferricyanide and uric acid is measured by an electrochemical detection chip, so that the magnitude of uric acid concentration in the test sample can be visually reflected by the current data.

2. Materials and Methods

2.1 Experimental principle

In this study, a uric acid detection chip was designed based on the redox reaction between potassium ferricyanide and uric acid, with the principle of (1) $K_3 Fe(CN)_6$ + uric acid → $K_4 Fe(CN)_6$ + uric acid oxide.

(2)$K_4 Fe(CN)_6 - e^- \rightarrow K_3 Fe(CN)_6$ Uric acid is oxidized by potassium ferricyanide, which loses electrons to generate potassium ferricyanide, and then the oxidation potential is applied to the surface of the working electrode, and potassium ferricyanide loses electrons to become potassium ferricyanide again, and the oxidation current on the surface of the uric acid detection chip is collected by the detection instrument to realize the conversion of the uric acid concentration size of the detected sample into the value of the circuit. The uric acid concentration in the sample can be measured by the detection circuit. The instrument is designed based on the principle of electrochemical sensor, and the oxidation potential is applied to the surface of the working electrode of the uric acid detection chip relative to the reference electrode, and the oxidation current generated on the surface of the working electrode of the cell phone due to the oxidation of uric acid is converted between the chemical reaction signal and the electrical signal by the electrochemical detection chip to obtain more accurate results of uric acid.

2.2 Experimental materials and apparatus

Experimental material: uric acid quality control solution with different uric acid concentrations (Since human blood samples are not easily available and inconvenient to use, a uric acid quality control solution was designed to replace the blood in this experiment, as follows: 100 mL of ultrapure water was taken, to which the following substances were added in order and the mass concentrations of each substance were made: sodium chloride 0.58% (w/w), phosphate buffer 1.82% (w/w) (pH 7.4), polyethylene glycol (molecular weight 40,000) 4 g/L, cuscuta red 0.1% (w/w), ProClin 300 0.04% (w/w). Uric acid was added to the above base solution at different concentrations (Uric acid was pre-dissolved with 0.lmol/L NaOH) to prepare a concentration gradient of 0.25 mmol/L, 0.5 mmol/L, 0.8 mmol/L, and 1.0 mmol/L of Uric acid quality control solution, respectively.)

Uric acid detection chip (by screen printing a conductive silver film on a PET sheet as a silver conductive layer connecting the three electrodes, and a carbon film printed on the front of the silver conductive layer as a counter electrode, working electrode, reference electrode, and suction sample judgment electrode. The reference electrode and the counter electrode share a common electrode, and the working electrode and the reference electrode form a circuit to measure the potential value of the research electrode. The working electrode and the counter electrode form another circuit for measuring the current value. The aspiration judgment electrode is used to detect whether the sample fills the entire biochemical reaction zone. Modify the reaction active layer on the electrode surface: the reaction layer solution is configured with ascorbate oxidase, potassium ferricyanide, carboxymethyl cellulose and phosphate in certain ratio, where ascorbate oxidase is the anti-interference substance, potassium ferricyanide is the electron mediator for the reaction with uric acid, and

carboxymethyl cellulose is the film-forming auxiliary component. 1.5 μL of the configured solution is sucked and dropped onto the reaction working area of the prepared electrode substrate, and (Dried at 37℃ for 20 min, and after drying, double-sided adhesive and hydrophilic film were applied to produce the uric acid detection chip.)

Test apparatus: open electrochemical detection chip, computer with detection software PSTrace 5.8

2.3 Experimental step design

Step 1: Insert the uric acid test chip into the electrochemical test chip and connect the electrochemical test chip to the computer via the data cable.

Step 2: Open the software and apply a drop of uric acid quality control solution to the surface of the uric acid test chip after the current display is smooth.

Step 3: Read the software value after 15s and compare it with the actual value.

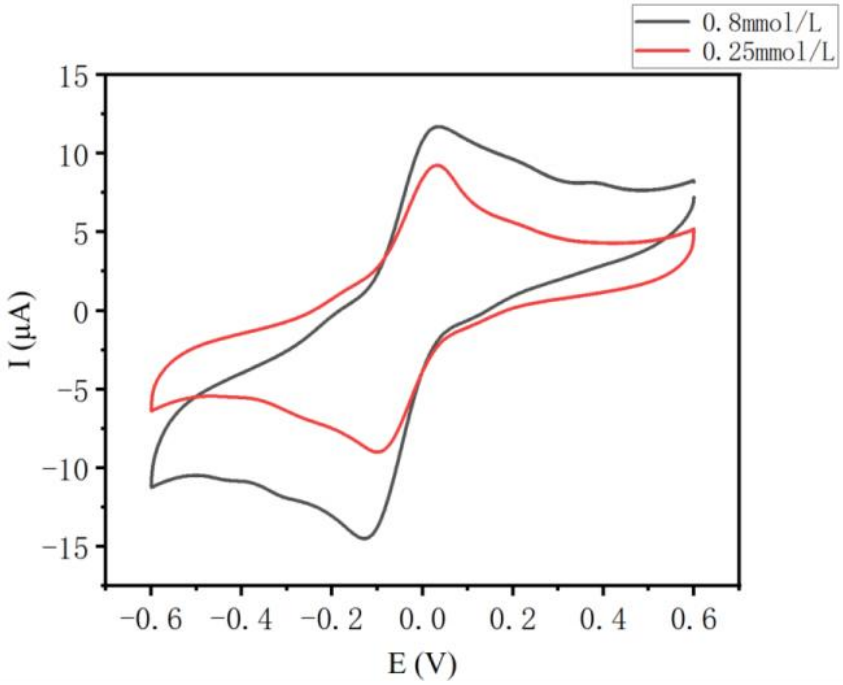
Step 4: Repeat the above steps using different concentrations of uric acid quality control solution.

2.4 Analysis of experimental results

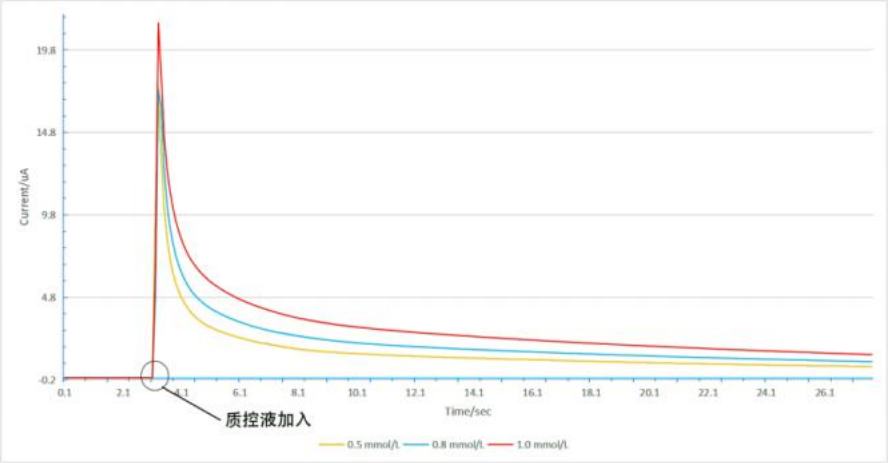
After several tests, it was shown that the measurement error was within ±10%, and the uric acid detection chip designed by the modified method has a high accuracy for measuring uric acid concentration.

3. Discussion of experimental results

At the end of the experiment, for further determination of the accuracy of the results, i.e. further testing of the functionality of this uric acid detection chip for uric acid sensing recognition, cyclic voltammetry and constant potential methods were used and tested again, as recorded below.



Cyclic voltammograms of uric acid quality control solution at different concentrations. It can be seen from the figure that a pair of redox peaks appear between -0.2 V and 0.2 V during cyclic voltammetry scan, which is the redox of Fe^{3+} /Fe^{2+} ion pair with the oxidation peak potential at about 0.03 V. As the concentration of uric acid QC solution increased from 0.25 mmol/L to 0.8 mmol/L, the redox peak current in cyclic voltammetry scan increased, which demonstrated the good sensing function of the chip for uric acid.



Relationship between uric acid quality control solution and response current for different uric acid concentrations at constant potential.

It can be seen from the figure that at a constant potential of 0.12 V, when the uric acid concentration in the uric acid quality control solution sample increased from 0.5 mmol/L to 0.8 mmol/L and then to 1.0 mmol/L, the response current magnitude increased sequentially with the increase of uric acid concentration after the addition of uric acid quality control solution, which further proved that the detection chip has a good function of uric acid sensing and recognition.

These two measurements further validate the accuracy of the results of the uric acid test chip.

4. Conclusion

The experiment showed that the electrochemical sensor based on the reaction between potassium ferricyanide and uric acid is more accurate in uric acid detection. Although the human blood experiment has not been conducted due to technical reasons, this experiment still provides a new idea for the design of uric acid detection chip, and we hope to provide our share for better uric acid detection.

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Antitumor Activity of Celery Loaded Lipid PLGA-TPGS Nanoparticles in Glioblastoma

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Abstract: Glioblastoma (GBM) is a highly aggressive brain tumor characterized by high recurrence and poor prognosis. Natural compounds are good alternatives for treating glioblastoma and are less toxic than synthetic drugs. Apigenin (AGN) is an effective phytochemical with strong antioxidant and anticancer potential. However, due to its high lipophilicity, the therapeutic effect is limited. Therefore, apigenin lipid polymer hybrid nanoparticles (LPHyNPs) were prepared and characterized according to various parameters in this study. The mean particle size (234.100±23.320 nm), PDI (0.330±0.098), zeta potential (-5.403±0.650 mV), EE (54.99±4.13%), etc. Besides, Morphological analysis by SEM showed that the spherical NP had dark nuclei, indicating that the drug was embedded in the nucleus. In vitro release studies showed that continuous release of AGN from LPHyNPs significantly increased the suspension level of AGN ($P<0.05$). Cell proliferation and apoptosis experiments showed that LPHyNPs could significantly inhibit cell proliferation and promote cell apoptosis. Therefore, the LPHyNPs developed may be an effective therapeutic system for the management of GBM.

Keywords*:* Apigenin; Hybrid Nanoparticles; Glioblastoma; Anti-Cancer Activity

Introduction

Glioma originates from glial cells and is a common malignant tumor in central nervous system. Gliomas can be classified into grade I to IV, with the malignant degree increasing successively, among which glioblastoma (GBM) has the highest malignant degree, with the incidence as high as 46.1%. The average survival time of patients is about 14.6 months, and the 5-year survival rate is less than 5% [1]. The gold standard of treatment for GBM combines surgical excision, radiation, and chemotherapy. However, currently available treatments are so inefficient that they only marginally improve the average survival rate of patients [2]. Therefore, the search for novel approaches to GBM, therapy with reduced adverse reactions is still necessary.

Apigenin (AGN) is a natural flavonoid found in a variety of vegetables and fruits, as well as some medicinal plants [3]. A number of studies have shown that AGN has a variety of therapeutic potential, such as anti-cancer, anti-inflammatory, antioxidant, anti-diabetes, etc[4, 5]. However, due to its high lipophilicity, its therapeutic effect is limited [6]. Over the past few decades, nanoparticles, such as lipid- and polymer-based systems, have made significant advances in targeted drug delivery. Nanotechnology offers an effective solution for treating different diseases because it has the potential to improve drug delivery throughout the body and increase their bioavailability [7, 8]. In addition, nanoparticles can be designed to selectively target specific cell receptors, thereby enhancing their absorption or facilitating their penetration through BBB [9]。

In this study, Vit-E-TPGS lipids HyNPs (LPHyNPs) containing AgNs were synthesized and characterized. It was subsequently validated for its role in GBM cells, aiming to provide a safe and effective drug for the treatment of GBM.

1. Materials and methods

1.1 Materials

AGN, Poly (lactic-co-glycolic acid) copolymer PLGA; 50:50, molecular weight 55000, Jinan Daigang Bioengineering Co., Ltd.). Polyvinyl alcohol (88% hydrolysis degree, Shanghai Weicheng Chemical Co., Ltd.). Both methanol and acetone were purchased from Sigma Aldrich (St. Louis, USA). D-alpha-tocopherol polyethylene Glycol 1000 succinate (Vit E TPGS) was obtained from Sigma Aldrich, St. Louis, Missouri, USA. Moreover, Lipoid SPC (hydrophosphatidylcholine from soy) was bought from LIPOID (GmbH, Ludwigshafen Germany). Dichloromethane (DCM) and dimethyl sulfoxide (DMSO, 99.9%) were got from Fischer Scientific (Loughborough,UK). GBM cell line U251 was obtained from the Cell Bank/Stem Cell Bank of the Chinese Academy of Sciences (Shanghai, China), while Annexin V/PI Apoptosis Assay kit was purchased from Invitrogen Corporation (Carlsbad, CA, USA).

1.2 Preparation of LPHyNPs nanoparticles

LPHyNPs were prepared by nanoprecipitation method[10] with slight modification. In briefly, 50 mg PLGA (50:50), 100 mg Lipoid S PC-3, and 5 mg AGN (previously dissolved in 100 µL DMSO) were dissolved in 5 mL DCM in first stage. In the second stage, the AGN/PLGA weight ratio was maintained at 1:10 w/w and the lipid: PLGA weight ratio was 2:1w/w. The Vit E-TPGS 1000 was dispersed at 0.5% w/v in 10 mL Milli-Q water heated to 70°C. The first stage solution was then added drop by drop (at a rate of 1.5 mL/min) to the preheated second stage solution at magnetic agitation (500 rpm). The mixed solution was then homogenized (T25 digital Ultra-Turrax, IKA, UK) for 2 minutes (21,000 rpm) and magnetically stirred at 25±1 °C at 500 rpm for 4 hours to completely evaporate the DCM. The final preparation is washed with Milli-Q water by centrifugation at 30,000 rpm at a high speed for 30 minutes (three cycles). The prepared LPHyNP was recovered and purified using dialysis techniques (Spectra/PorVR dialysis membranes). The final LPHyNPs formulation (100 µL) was diluted 50 times with Milli-Q water and characterized by dynamic light scattering (DLS) measurements, such as particle size, PDI, and zeta potential. In addition, mannitol (1%, w/v) was used as a freeze protector and frozen at -80°C and freeze-dried for further characterization.

1.3 Characterization of LPHyNPs

1.3.1 Mean Particle Size (Z-Ave), zeta Potential and Polydispersity Index (PDI)

The mean particle size and zeta potential of nanoparticles were measured by dynamic light scattering and electrophoretic light scattering techniques [11]. At the same time, the polydispersity index of the nanoparticles was measured, which showed that the particle size distribution of the nanoparticles was uniform. The freshly prepared NP formula was diluted appropriately before measurement. Three measurements were taken using Zetasizer Nano ZS (Malvern Instruments, Worcestershire, UK).

1.3.2 Determination of encapsulation efficiency and drug loading

Drug embedding (EE) and loading efficiency (DL) of prepared LPHyNP were analyzed in supernatant of collected samples (indirect method)[12]. Approximately 5 mL of LPHyNPs was diluted in 5 mL of methanol to dissolve the drug and precipitate PLGA and other excipients. The suspension (centrifuge at rpm for 20 minutes at 4 ° C) was centrifuged and the supernatant was collected. To analyze drug concentrations in the collected supernatant, a 30 µL sample was injected into an HPLC-UV system. A chromatographic technique containing a C18 column (5 µm, 250 mm × 4.6 mm) was developed for this purpose. The mobile phase consisted of acetonitrile and 0.1% formic acid at 55:45 (v/v), where the pH was maintained at 7.4, and was isodemi- pumped at a flow rate of 1 mL/min and UV detection was performed at 270 nm. According to the following equation:

Encapsulation rate calculation formula：EE%= Measured drug load/Theoretical drug load×100%.

Formula for calculating drug load：DL%= The total amount of drug measured in the nanoparticles / Total mass of nanoparticles×100%.

1.3.3 Morphological determination

The shape and surface morphology of apigenin loaded nanoparticles were determined by scanning electron microscopy (SEM). SEM micrographs of nanoparticles were obtained by Au coating at 7.00kV.

1.4 In vitro release studies

In vitro drug release was performed using dialysis bags with an interception molecular weight of 12,000Da. In short, the LPHyNPs suspensions were placed separately in dialysis bags, knotted and dipped into the release medium. The release medium (50 mL) was phosphate buffered brine (PBS) with pH 7.8 and sodium dodecyl sulfate (1%) as the solvent enhancer. Throughout the process, the system was maintained at 37 °C in a shaker bath. Samples were collected at 1, 2, 3, 4, 6, 8, 24, 48, and 72 h, and AGN content was analyzed at given time intervals using HPLC techniques.

1.5 Cell activity assay

The growth inhibitory activity of LPHyNPs on U251 glioma cells was determined by MTT assay. U251 glioma cells were inoculated in 96-well plates with a density of 1×10^4 cells/well, and incubated overnight at 37℃ and 5% CO_2. The cells were treated with blank NP, AGN, and LPHyNPs at concentrations of 6.25, 25, and 100 μg/mL and left for 24 h. Then, 50 mg/ml MTT reagent was added to the sample and incubated for another 3 h until the purple product was formed. Formaldehyde crystals formed in 0.1ml DMSOlyzed cells were added, and absorbance was measured at 570 nm using an enzyme label.

1.6 Cell apoptosis assay

Apoptosis was determined using the annexin V (FITC)/PI assay kit (K101-100, Biovision Inc., Milpitas, CA, USA). In simple terms, 1×10^5 cells /mL were inoculated into 96-well plates, incubated for 24 h, then centrifuged, washed with phosphate buffers, and resuspended with 500μL buffers. Subsequently, 100μL of the resuspension cells were incubated again with 5μL PI and Annexin-V in a darkroom at room temperature for 15 min. The data were analyzed using a BD FACSCalibur reader and flow cytometry and flow system software.

1.7 Statistical analysis

The data were processed by SPSS 26.0 and Graphpad prsim 9 software. Measurement data were expressed as mean ± standard deviation and counting data as %. T test or one-way analysis of variance were used to compare the differences between groups. $P<0.05$ indicated significant difference and had statistical significance.

2. Results

2.1 Differences in mean particle size, zeta potential and polydispersity index of LPHyNPs

As shown in Table 1, the average particle sizes of prepared blank LPHyNPs and loaded LPHyNPs were 201.100±10.090 nm and 234.100±23.320 nm, respectively. Meanwhile, the PDI of blank LPHyNPs and loaded LPHyNPs were 0.113±0.061 and 0.330±0.098, respectively. These results were related only to the addition of drugs. After the addition of the drug, the particle size of NP increases due to the inclusion of the drug, which enlarges the particle size. On the contrary, PDI of loaded LPHyNPs was decreased compared with blank LPHyNPs, indicating a uniform amount of NP. In addition, the average zeta potential of blank LPHyNPs and loaded LPHyNPs were -4.277±0.968 and -5.403±0.650, respectively (Figure. 1).

Table 1. Average particle size, zeta potential and polydispersity index of LPHyNPs

Groups	mean particle size (nm)	zeta potential (mV)	PDI
Blank LPHyNPs	201.100±10.090	-4.277±0.968	0.113±0.061
LPHyNPs	234.100±23.320	-5.403±0.650	0.330±0.098

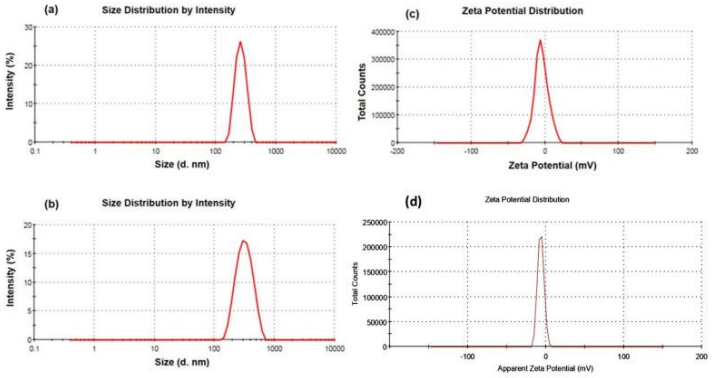

Figure 1. (a; b) Particle size of blank LPHyNP and loaded LPHyNP, and (c, d).zeta potential of blank LPHyNP and loaded LPHyNP

2.2 Drug encapsulation and loading efficiency for preparing LPHyNPs

EE and DL of LPHyNPs were calculated to determine drug concentrations in NP. The EE of LPHyNPs was 54.99±4.13%. In this case, the drug is usually encased in NP, thereby continuously releasing the drug from LPHyNPs. At the same time, DL of LPHyNPs was recorded as 11.13±0.83%, DL due to the affinity of AgNs to the polymer used (i.e., PLGA).

2.3 Morphological analysis of LPHyNPs

The surface morphology of apigenin nanoparticles was observed by scanning electron microscopy at 7.00 kV. According to the SEM micrographs obtained, the nanoparticles were spherical and the surface morphology was smooth (Figure 2).

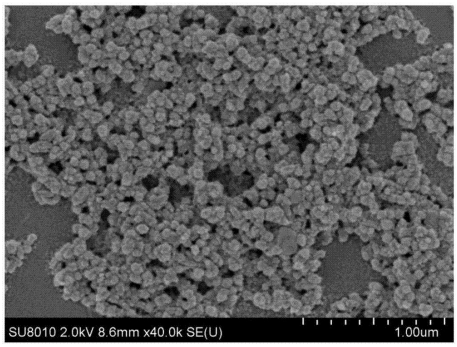

Figure 2. SEM image of LPHyNP

2.4 Study on release patterns in vitro

In vitro drug release study was carried out by dialysis bag method, and the release mode of LPHyNPs and AGN suspensions was analyzed. The results were shown in Figure 3, and the release of AGN from LPHyNPs was sufficient to last 72 hours. In contrast, AGNs are fully released within 24 hours, with a rapid release pattern of AGN suspension. In the case of AGN release from LPHyNPs, the initial burst release was observed for up to 8 hours and then continued for up to 72 hours. Therefore, the release of AGN by LPHyNPs was significantly better than that by AGN suspension ($p<0.05$). LPHyNPs' PLGA package controls release and provides continuous release mode for over 64 hours.

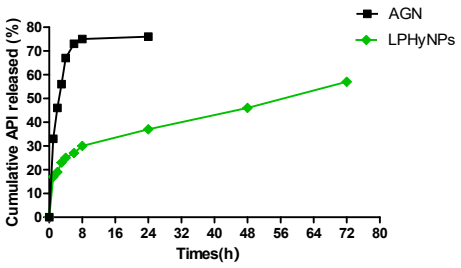

Figure 3. In vitro release of AGN from LPHyNP and AGN by dialysis bag method in a PBS suspension containing SLS (1%) as a solvent enhancer.

2.5 Cell viability analysis (MTT assay)

Biosafety and cytotoxicity of blank LPHyNPs, AGN suspensions, and LPHyNPs were evaluated on U251. The consequences showed that when U251 cells were treated with various drug preparations, the IC50 of blank LPHyNPs was 124.50± 8.34μg /mL, and the IC50 of AGN suspension was 51.37±3.06 μg/mL. LPHyNPs showed an IC50 of 11.05±1.38 μg/mL (Figure 4).

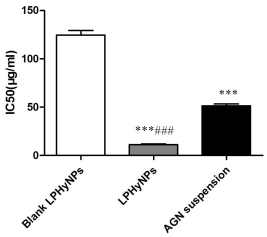

Figure 4. MTT determination results of blank LPHyNP, AGN suspension and LPHyNP. Values are expressed as mean ±SD, ***p< 0.001.

2.6 Cell apoptosis assay

As shown in Figure 5, the apoptotic activity of cells treated with LPHyNP was almost twice that of blank LPHyNP and AGN. On the other hand, blank LPHyNP and AGN showed similar apoptotic activity (Q4:11.08%, blank LPHyNP; 13.51%, AGN suspension) and 24.15% (LPHyNPs). Based on apoptotic activity, it was found that blank NPs showed higher apoptotic activity than the control.

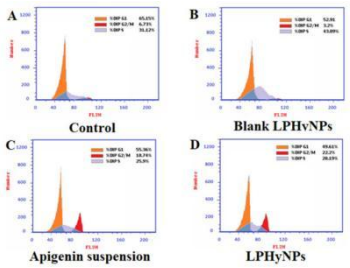

Figure 5. Apoptosis was detected by flow cytometry. (A) Control, (B) blank LPHyNP, (C) apigenin suspension, (D) LPHyNP. Values are expressed as mean ±SD, *p<0.05, **p<0.001. ns indicated a non-significant difference between the results.

3. Discussion

Glioma is a common intracranial malignant tumor of human central nervous system. It is aggressive and has a poor prognosis[13]. BBB and BBTB are the biggest obstacles to the delivery of many drugs to gliomas, thus limiting their

effectiveness. Therefore, the treatment of glioblastoma urgently requires the development of therapeutic drugs and delivery systems that can transcend physiological and pathological barriers.

AGN is a flavonoid widely found in nature, which is mainly extracted from celery, parsley, thyme, chamomile and onion [14]. Studies have shown that it has important antioxidant [15]、anti-inflammatory[16]、anti-tumor[17-20] and anti-fibrosis effects. Although AGN is an effective anticancer molecule, it has significant pharmacokinetic limitations. AGNs have been classified as Class II drugs under the Biopharmaceutical Classification System, which has high permeability and low solubility [21]. Nanoparticles are one of the best ways to improve the solubility and efficacy of low solubility bioactive drugs [22]. Compared with traditional Chinese medicine, nano Chinese medicine has the characteristics of slow release, targeting and high bioavailability. Nano Chinese medicine and nano carrier are prepared into sustained-release agents by various methods, so that the drug carrier complex enters the body in a certain way, and the drug is released from the nano capsule through leach, penetration and diffusion of the wall capsule, avoiding the "sudden release effect". In addition, nanocarriers can resist the degradation of drugs by drug degrading enzymes, play a protective role on drugs, improve the half-life of drugs, and prolong the action time of drugs.

Apigenin lipid polymer hybrid nanoparticles (LPHyNPs) were synthesized and characterized in this study. The mean particle size and PDI of LPHyNPs were 234.100±23.320 nm and 0.330±0.098, respectively, which were significantly higher than that of blank control. The average zeta potential of LPHyNPs was lower than that of the blank control group, indicating that the synthesis of nanoparticles was related to the addition of relevant AGNs. After the addition of AGN, the particle size of NP increases due to the inclusion of drugs, which makes its particle size expand. Therefore, the LPHyNPs developed is considered to be a stable preparation. Moreover, morphological analysis showed that the nanoparticles were spherical with smooth surface morphology.

EE is one of the main advantages of developing PLHNPs. A high EE percentage of PLHNPs is required to achieve the desired therapeutic effect. In this study, EE and DL of LPHyNPs were calculated to determine drug concentrations in NP. The EE of LPHyNPs was 54.99±4.13%. In this case, the drug is usually encased in NP, thereby continuously releasing the drug from LPHyNPs. At the same time, DL of LPHyNPs was recorded as 11.13±0.83%, DL due to the affinity of AgNs to the polymer used (i.e., PLGA).

In vitro release studies showed that the PLGA package of LPHyNPs controlled release and provided a sustained release mode of over 64 hours, which might be due to the existence of a certain amount of free apigenin in the nanostructured lipid carrier, or it might be related to the easy release of drugs adsorbed on the superficial surface or surface of the nanostructured lipid carrier [2].

Antitumor experiments showed that LPHyNPs significantly inhibited the proliferation of glioma blasts, promoted their apoptosis, and showed high anticancer activity, which may be due to the excellent drug penetration of the manufactured nanopreparations into tumor cells. LPHyNP has the potential and effectiveness to improve apoptosis of glioma cells by stimulating apoptotic activity.

In summary, AGN-LPHNPs was prepared by single step nano precipitation method in this study, and showed good stability. Encapsulation of AGNs in LPHNPs improves solubility and represented slow release for up to 72 hours. In vitro experiments confirmed that AGN-LPHNPs has a significant effect on the proliferation and apoptosis of glioma blast cells, and may affect the development of glioma blast cells by inhibiting proliferation and promoting apoptosis. However, this study also has some limitations, and the mechanism of action and in vivo effects of AGN-LPHNPs still need to be further studied.

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Bioinformation Analysis of Key Genes and Pathways of Acute Myocardial Infarction to Predict Potential Medicine

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Abstract: This study was aimed to retrieval differentially expressed genes and biological signaling pathways of Acute Myocardial Infarction (AMI) based on integrated bioinformatics analysis[1]. Using Gene Expression Omnibus (GEO) dataset was used to download mRNA expression profile GSE66360 containing 50 healthy cohorts and 49 patients experiencing Acute Myocardial Infarction to study the the potential mechanism and predict medicine target in Acute Myocardial Infarction (AMI). The consistently differentially expressed genes(DEGs) were identified,and functional annotation and pathway analysis of these genes were excavated with GO, KEGG and Reactome. The protein-protein interaction network(PPI) of DEGs was created with Cytoscape and STRING to screen the hub genes including TNF, IL1B, FN1, CD4, PLEK, JUN, TLR4, FOS, LRRK2, TLR2. On the ground of discovered information, the potential drugs were calculated. The functional genes enrich mainly in Cytokine-cytokine receptor interaction, osteoclast differentiation, neutrophil degranulation and signaling by interleukins and so on. This study digs the pathological process of AMI and may aid in learning the deeper molecular mechanism of AMI and predict potential drugs of this disease.

Keywords: Acute Myocardial Infarction; Bioinformatics Analysis; Gene Expression Omnibus

1. Introduction

Although the burden cardialvascular disease (CVD)brings to us has been reduced sharply, CVD still accounts for a third of all deaths in China and worldwide each year.This desease can be the leading cause of death all over the world[2]. The most basic cause of myocardial infarction is coronary atherosclerosis. Plaques in the coronary artery cause stenosis of the coronary artery lumen, which leads to insufficient blood supply to the myocardium. One or more coronary atherosclerotic plaques can lead to coronary stenosis. On this basis, once the blood supply is sharply reduced or interrupted, it will cause serious myocardial infarction. Acute ischemia lasting for a long time reaches about half an hour, and AMI will occur.

Genome-wide Association Studies (GWAS) refers to the research on the potential relationship between genes and diseases that is carried out in multiple centers, large samples and repeated verification on the whole genome level. The Increased sample size of genome-wide association studies (GWAS) will revitalize the statistical power to identify the missing causal variants and may highlight additional disease mechanisms[3].There has already been experiments to prove that certain genes are related to the pathology of AMI. However, the exact mechanism is still not clear.

To further learn and dig the mechanism of the disease with gene relations and find potential small molecular medicine to accurately target certain signaling pathways related to Acute Myocardial Infarction, inhibiting the action of related signaling molecules, reducing inflammatory response and myocardialcyte damage after AMI may help improve the prognosis of myocardial infarction treatment.Bioinformatics was employed in this study to screen disease up and down regulated genes in order to obtain a better understand of the micromechanism and predict target drug to improve the clinical treatment.

2. Research methods and materials

2.1 Statistic download with Gene Expression Omnibus

The Gene Expression Omnibus (GEO) database is a gene expression database created and maintained by the National Center for Biotechnology Information (NCBI) in the United States. It collects high-throughput gene expression data submitted by research institutions around the world[4]. GEO (https://www.ncbi.nlm.nih.gov/geo/) was used to select samples composed of blood samples from 49 acute myocardial infection subjects and 50 healthy subjects without AMI. After downloading the GSE66360 series matrix files and GPL570, the perl script was employed to integrate and obtain a gene expression profile.

2.2 Evaluation of differentially expressed genes

To gain an insight of the differently expressed genes, R limma package of bioconductor was used to get the gene expression profile standaraized and adopted values of log2. Differential expressed genes (DEGs) were obtained from acute AMI and healthy subjects using P-value <0.05 and logFoldChange> 1[5]. and the related visualized heat map and gene loci map were drawn.

2.3 Protein and protein interaction and hub genes screening

Protein–protein interactions (PPIs) are of vital importance for obtaining mechanistic insights into the functional organization of the proteome. The resolution of PPI functions can do us an aid in the identification of novel diagnostic and therapeutic targets with medical utility, which is significant in learning the potential relationship of certain molecules[6]. DEGs were used in the STRING database to reveal their relationship with a minimum required interaction score>0.4. In order to make the data based on the number of connections between DEGs, the hub genes were determined by the betweenness centrality.

2.4 Enrichment analysis with GO/Rectome/KEGG

In order to make the differential genes functioning mechanism clear, the gotten differently expressed genes were employed to do GO, KEGG and Rectome enrichment analysis under the asistent of DAVID Bioinformatics Resources (LHRI) (https://david.ncifcrf.gov/). KEGG is a database for systematic analysis of gene function and genomic information, which helps researchers to connect key genes and expression information as a whole network for research. The database provides integrated metabolic pathway queries, including almost all possible metabolic pathways such as nucleotides, amino acids, carbohydrates, etc. Therefore, it is a powerful database for whole genome and metabolic pathway exploration.

2.5 Small molecular drugs prediction with Connectivity Map (https://clue.io/query)

Connective map was employed to analyse dig small molecular drugs. Connectivity Map is an online analysis tool used in the predction process of small molecular drugs[7], this comprehensive, large-scale perturbation database comprehends 1.5 million gene expression profiles from cultured human cells, can be used to identify potential therapeutic targets or drugs for the submitted gene signature[8].

3. Results

3.1 DEGs identification

Acocording to the threshold value P<0.05 and | logFoldChange|>1, differently expressed genes were identified in GSE66360 gene expression profile data.351 DEGs were found, containing 289 upregulated genes and 62 downregulated genes. NR4A2, S100A12, ITLN1, CSTA, CCL20, FCER1G, IL1B, TREM1, PTX3, NFIL3A was top 10 upregulated genes and TSIX, XIST, CTD-2528L19.6, GIMAP7, GIMAP4, CCR2, CRTAM, B3GALT2, GIMAP6, CCR5 was top 10 down regulated genes. Heat map and volcano map were respectively drawn.

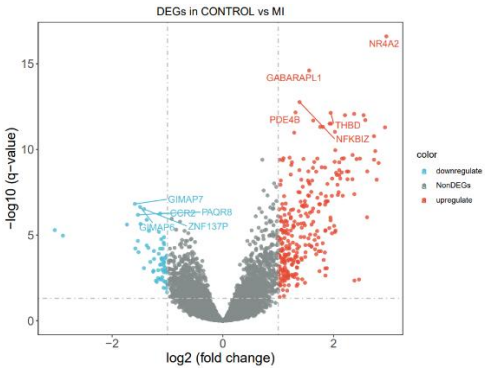

Figure 1. The distribution volcanic map of 351consistene DEGs of AMI (red:upregulated;blue:downregulated)

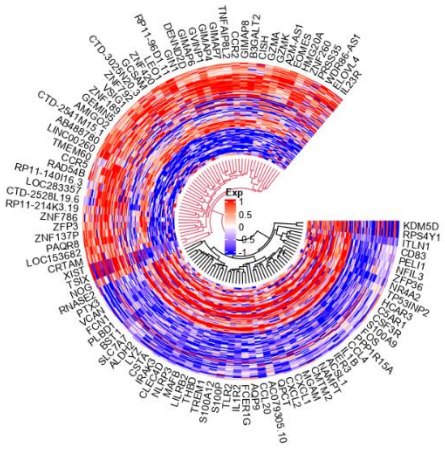

Figure 2. The distribution circle heat map of 100 consistent DEGs containing top 50 upregulated and 50 downregulated of AMI

(red:upregulated;blue:downregulated)

3.2 GO annotation analysis of DEGs

The 351 DEGs were analyzed by GO which divides genes functions into three main parts including molecular function(MF), cellular component(CC) and biological process(BP).The most enriched term was response to positive regulation of cytokine production in BP,tertiarygranule in CC and pattern recognition receptor MF,which proved a series of lipid metabolism disorders and inflammatory response.

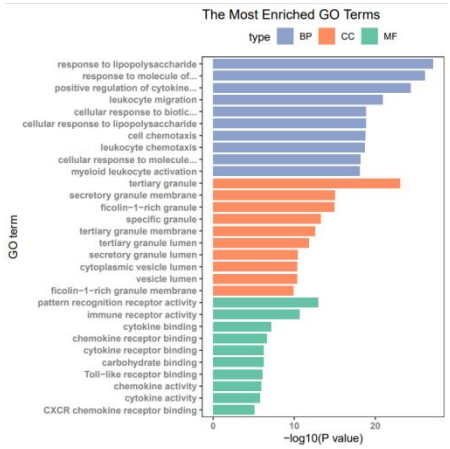

Figure 3. The most enriched GO terms classified by BP,CC and MF

3.3 KEGG and Rectome pathway analysis of DEGs

On the basis of KEGG database, 10 significant enriched cell signaling pathways were found out. The 10 most significantly enriched signaling pathways were Cytoline-cytokine receptor interaction, Osteoclast differentiation, Chemokine signaling pathway, Leishmaniasis, Amoebiasis, Hematopoietic cell lineage, Rheumatoid arthritis, Malaria, NOD-like receptor sigmaling pathway.

The Rectome enrichment showed that the top 10 pathways were Neutropjil degranulation, Signaling by interleukins, Toll-like Receptor Cascades, Interleukin-10 signaling, MyD88:MAL(TIRAP) cascade initiated on plasma membrane, Toll like Receptor (TLR) TLR6:TLR2 cascade,TLR2,TLR4 and Interleukin-4 and interleukin-13 signaling.

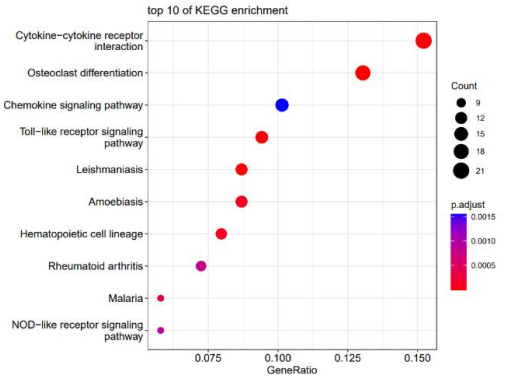

Figure 4. Top 10 enriched pathways in Rectome pathway

3.4 PPI network construction and identification of hub genes

351 DEGs in AMI were employed to builds a protein-protein interaction with STRING, as it presents, there are 307 nodes and 2374 edges in the PPI network. It has an average 15.5 node degree and 0.474 avg.local clustering coefficient. In order to gain an insight into the complex network and find the hub genes. A useful method calles betweenness centrality (BC) was adopted in the process of visual graph construction to identify core nodes and edges[9]. In gragh theory,intermediate centrality is one of the measurement criteria for network graph centrality based on the shortest path. For a fully connected network graph, there is at least one shortest path for any two nodes. In an unweighted network graph, the shortest path is the sum of the number of edges included in the path, while in a weighted network graph, the shortest path is the sum of the weights of the edges included in the path. The betweenness centrality of each node is the number of times these shortest paths pass through that node.The ten DEGs with the highest number of closely related genes are regarded as heb genes, they are tumor necrosis factor (TNF), interleukin 1, beta (IL1B), cluster of differentiation 4 (CD4), Pleckstrin (PLEK), Jun proto-oncogene (JUN), Toll-likereceptor4 (TLR4), Fructooligosaccharide, (FOS), Leucine-rich repeat kinase 2 (LRRK2), toll-like receptor 2 (TLR2). These genes may play an important administrative function in the pathological process of AMI.

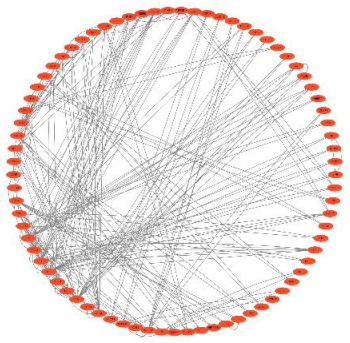

Figure 5. The PPI image with CB norm

3.5 Small molecular drugs prediction with Connectivity Map (https://clue.io/query)

The main feature of iron death is the lipid peroxidation of intact cell membrane, which leads to the deposition of lethal dose reactive oxygen species, which is an iron dependent process and can be inhibited by iron chelators[10].The Cmap analyse could see a decrease in GPX4 protein levels in myocardial cells and early induction of lipid peroxide accumulation, which can be Fer-1 inhibition[11], proves a decrease in GPX4 expression during MI, causing iron death and inducing myocardial damage.

4. Discussion

The two modes of myocardial cell death in Acute Myocardial Infarction are inflammation centered necrosis and gene controlled apoptosis under ischemia and hypoxia, respectively[12]. Apoptosis is a programmed cell death that can be regulated at the genetic level. Understanding and regulating certain signaling pathways involved in genes is an effective means for us to understand and reduce the occurrence of apoptosis during myocardial infarction[12].

Under the circumstance of the statistically high enrichment pathways of TLRs and NF- κ B. A particular focus on these two pathways was paied. It was estimated that asiatic-acid (AA) may potentially function in inhibiting the release of inflammatory factors by Cmap. In a new study, the expression of SIRT3 which can activate PPARγ, thus protecting the myocardium was significantly improved after administration of AA to AMI rats. Under this circumstance, AA development can be considered for SIRT3/β- catenin / PPARγ specific inhibition of signaling pathways. Simlilar experiment observed that after oxalic acid intervention lastlt after 4 weeks, TUNEL staining results showed a significant reduce of apoptotic cardiomyocytes, with orderly arrangement of cells and muscle bundles.At the same time,the complete cell morphology he infiltration of inflammatory cells was relatively low. The myocardial apoptotic cells were significantly reduced in each dose group of asiatic acid, and the levels of LDH, CK-MB, MDA in serum of rats were significantly reduced. The levels of SOD in serum were significantly increased, and the expression of Nrf2, HO-1 mRNA and protein was significantly increased. NF-κ B mRNA and protein expression were significantly reduced. These changes suggest that asiatic acid may regulate Nrf2/HO-1 and NF- κ B pathway to reduce impairment Acute Myocardial Infarction.

The CXCL16 was highlighted statistically in the upregulated genes analysis, this gene belongs to the CXC chemokine subfamily, which includes transmembrane domains and mucin like structures. It is characterized by transmembrane and there are two forms of dissolution[14]. CXCL16 can exacerbate myocardial infarction by three aspectsor progresses: Firstly, it functions as chemokines and can bind to phosphatidylserine -oxidized low-density lipoprotein scavenger receptors, participating in inflammatory reactions.Secondly, CXCL16 produces chemotaxis on T lymphocytes and promote T lymphocytes to metastasize like ischemic sites, thereby severer the development of atherosclerosis and myocardial infarction. The third CXCL16/CXCR6 axis can increase tumor necrosis factor-α(TNF-α) and promote myocardial fibrosis process, and this also echoes the HUB GENE with the highest centrality in the number of PPI intermediaries.

TREM1 gene is a member of the Ig superfamily and is expressed in myeloid cells. TREM1 can up regulate the expression of cell surface activation markers while stimulating the release of proinflammatory chemokines and cytokine,which can also be observed in the KEGG signaling pathway enrichment in this study.

The two genes have a relatively strong correlationship with each other, and it was also clear that there were other inflammatory related genes upregulated by TREM1.So it is significant to find a ideal dtug like AA to reduce the inflammatory symptoms and inhibit the apoptosis of myocardialcytes. In subsequent experiments, physical experiments will also be conducted to detect the expression of related genes and measure the protective effect of drugs on myocardial cell apoptosis through pathological changes in apoptosis markers such as mitochondrial morphology changes.

5. Conclusion

Acute Myocardial Infarction is the most common in Europe and the United States. Every year there is about 1.5 million incidence rate in the United States, while the incidence rate in China is also on the rise. At least 500000 new cases occur every year, and at least 2 million patients now, which accounts for a significant proportion of the population. It is a major factor affecting the health of Chinese people and cannot be ignored. Therefore, it is urgent to do a good job in disease prevention, treatment and prognosis rehabilitation.

There still exists some shortcomings in this study such as lack of survival curve analysis and animal experiments makes it impossible to accurately apply the analysis results and drug predictions to patients with Acute Myocardial Infarction. In addition, the side effects of this drug and conditions for drug application also need to be explored, which will be the next step of work. So in the new era of healthy China and the healthy world, preventing myocardial infarction plays a crucial role. When symptoms such as arrhythmia, shortness of breath, body pain, or chest tightness occur, one should immediately seek treatment from the hospital, regardless of the age group.

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Effect of Progesterone Combined with Low Molecular Weight Heparin Sodium in the Treatment of Recurrent Miscarriage

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Abstract: **Objective:** To analyze the effect of progesterone combined with low molecular weight heparin sodium in the treatment of recurrent miscarriage. **Methods:** A total of 68 patients with recurrent miscarriage admitted to our hospital within 1 year from 2022.04 to 2023.04 were selected as research subjects, and they were divided into control group (34 cases, treated with progesterone) and observation group (34 cases, treated with low molecular weight heparin sodium combined with progesterone) according to the random number table method. The treatment effects of the two groups were analyzed. **Results:** Both groups achieved certain results after treatment, but the coagulation indexes, sex hormone levels and delivery outcomes of the observation group were better than those in the control group after treatment with progesterone combined with low molecular weight heparin sodium (P<0.05). **Conclusion:** Progesterone combined with low molecular weight heparin sodium can effectively improve the coagulation effect, regulate the level of sex hormones, and improve the outcome of childbirth in patients with recurrent miscarriage.

Keywords: Recurrent Miscarriage; Progesterone; Low Molecular Weight Heparin Sodium

Introduction

The definition of recurrent miscarriage varies from country to country, and the 2020 Chinese expert consensus believes that recurrent miscarriage can be diagnosed if two or more consecutive spontaneous abortions (pregnancy less than 28 weeks gestation, pregnancy loss of less than 1000 g of fetal weight) or biochemical pregnancy (sperm-egg combination develops into a fertilized egg but does not implant in the uterus [1]. The symptoms of early spontaneous abortion mainly include: vaginal bleeding, lower abdominal pain, discharge of pregnancy products, etc., and the symptoms of late spontaneous abortion also include cervical dilation, fetal cyst bulge, etc. Biochemical pregnancy presents with serum chorionic gonadotropin- hyperelevation but is difficult to detect. 80% of patients with early recurrent miscarriage and 90% of patients with late recurrent miscarriage can be successful after timely and standardized treatment. Reduce complications and improve quality of life [2]. Therefore, it is important to adopt reasonable and effective treatment regimens for patients with recurrent miscarriage to improve delivery outcomes. The effects of progesterone combined with low molecular weight heparin sodium in the treatment of recurrent miscarriage were investigated herein, as reported below:

1. Objects and methods

1.1 Object

A total of 68 patients with recurrent miscarriage admitted to our hospital within 1 year from 2022.04 to 2023.04 were selected as the research subjects, and they were divided into control groups (34 cases, aged 22-40 years, with an average of 29.11±1.43 years; 4-9 weeks' gestation, mean 5.14±0.31 weeks; Body weight 45-63kg, average 51.37±3.49kg; 2-6 pregnancies, with an average of 3.67±0.54; The number of miscarriages was 2-4, with a mean of 2.66±0.45) and the observation group (34 cases, age 23-39 years, mean 28.04±1.37 years; 4-8 weeks' gestation, with an average of 5.27±0.47

weeks; Body weight 44-65kg, average 52.03±3.53kg; 2-5 pregnancies, with an average of 3.54±0.41; The number of miscarriages was 2-5, with an average of 2.87±0.37). There was no significant difference in general data between the two groups (P>0.05).

Inclusion Criteria: Both groups of patients and their families were aware of the study and signed informed consent; Number of miscarriages≥2; Clinical data are complete.

Exclusion criteria: patients with diseases of the endocrine system; Patients with congenital uterine dysplasia; Patients with important organ diseases such as liver and kidney; Patients with autoimmunosuppressive diseases; Those who have contraindications or allergies to the drugs in this study; People with mental disorders; those with cognitive impairments; Drop out of the investigator halfway.

1.2 Method

Both groups were treated with basic treatment: folic acid tablets (Gansu Lan Pharmaceutical Co., Ltd., Sinopharm H62020684, specification: 5mg/tablet), vitamin E softgels (Jilin Tonghua Boxiang Pharmaceutical Co., Ltd., Sinopharm H22021633, specification: 5mg/capsule) were selected for oral administration. The doses were 10 mg / time, 1 time / day; 5mg / time, 2 times / d.

On this basis, the control group was treated with progesterone (Zhejiang Xianju Pharmaceutical Co., Ltd., Sinopharm H20041902, specification: 50mg/capsule), oral, 100mg/time, 2 times/d, and continued to be used until the end of 12 years of pregnancy.

The observation group was treated with low molecular weight heparin sodium injection (Qilu Pharmaceutical Co., Ltd., Sinopharm H20030429, specification: 5000IU/branch) on the basis of the control group, subcutaneous injection, 5000IU/time, 1 time/d, and continuous medication for 12 weekends.

1.3 Observation indicators

The two groups of coagulation function indexes were compared, including prothrombin time (PT), activated partial thromboplastin time (APTT), fibrinogen level (Fib), tissue plasminogen activator (t-PA), plasma plasminogen activator inhibitor-1 (PAI-1). Levels of sex hormones were compared between two groups, including progesterone (P), estradiol (E_2), follicle-stimulating hormone (FSH), and blood chorionic gonadotropin (HCG); The two groups were compared for birth outcomes, including miscarriage, preterm birth, term delivery, and live birth.

1.4 Statistical analysis

The SPSS20.0 software was used to statistically analyze the data, and the "$\bar{x} \pm s$" was used to indicate the measurement data, and the t-test was used for the intergroup comparison results. "n,%" was used to indicate the measurement data, and the x^2 test was used for the between-group comparisons. P<0.05 indicates that the data difference is statistically significant.

2. Results

2.1 Comparison of coagulation function indexes between the two groups

The coagulation function indexes in the observation group were significantly better than those in the control group, and the differences were statistically significant (P<0.05). As shown in Table 1:

Table 1 Comparison of coagulation indexes between the two groups ($\bar{x} \pm s$)

Groups	Number of cases	PT（s）	APTT（s）	Fib（g/L）	t-PA（AU/ml）	PAI-1（AU/ml）
Observation group	34	13.85±1.57	30.33±2.04	2.26±0.24	0.65±0.17	0.54±0.24

Control group	34	12.13±1.61	18.59±1.84	3.13±0.36	0.54±0.13	0.76±0.29
t	-	4.469	24.918	11.725	2.997	3.408
P	-	0.001	0.001	0.001	0.004	0.001

2.2 Comparison of sex hormone levels between the two groups

The levels of sex hormones in the observation group were significantly better than those in the control group, and the differences were statistically significant ($P<0.05$). As shown in Table 2:

Table 2 Comparison of sex hormone levels between the two groups ($\bar{x} \pm s$)

Groups	Number of cases	P（μg/L)	E_2（ng/L）	FSH（U/L）	HCG（mIU/ml）
Observation group	34	27.64±2.94	456.97±51.06	6.27±1.07	6882.53±711.05
Control group	34	23.15±2.23	424.03±40.13	7.86±1.27	6104.29±675.67
t	-	7.095	2.958	5.583	4.626
P	-	0.001	0.004	0.001	0.001

2.3 Comparison of delivery outcomes between the two groups

The maternal and infant outcomes in the observation group were significantly better than those in the control group, and the differences were statistically significant ($P<0.05$). As shown in Table 3:

Table 3 Comparison of maternal and infant outcomes between the two groups (n,%)

Groups	Number of cases	Abortion	Premature birth	Full-term delivery	Live birth
Observation group	34	2（5.88）	5（14.70）	26（76.47）	33（97.06）
Control group	34	8（23.53）	13（38.24）	11（32.35）	23（67.65）
x^2	-	4.221	4.836	13.339	10.119
P	-	0.040	0.028	0.001	0.001

3. Discussion

The causes of recurrent miscarriage are complex and diverse, and it is currently believed that they can be mainly divided into the following types: genetic factors, immune factors, thrombophilia, endocrine factors, anatomical factors, infectious factors, male factors, environmental factors and unknown causes. The occurrence of recurrent miscarriage may adversely affect the couple's relationship and family relationship. It may also cause excessive mental stress in the pregnant woman, affecting the pregnancy, thereby increasing the risk of miscarriage. The disease may also be passed on to the next generation [3]. The incidence of the disease is approximately 1 to 5 percent in all women of reproductive age, with older age increasing the risk [4]. Therefore, it is important to adopt reasonable and effective treatment regimens for patients with recurrent miscarriage to improve delivery outcomes.

In this study, progesterone combined with low molecular weight heparin sodium was used in patients with recurrent miscarriage, and the coagulation function indexes, sex hormone levels, and delivery outcomes in the observation group were

better than those in the control group, and the differences were statistically significant (P<0.05). It shows that it can effectively improve the coagulation function of patients, regulate their sex hormone levels, and improve the outcome of delivery. This is because progesterone is a steroid hormone secreted by the ovaries, placenta and adrenal glands, in the presence of sufficient estrogen, progesterone can make the endometrium change from proliferative phase to secretory period, providing favorable conditions for pregnant egg implantation, after fertilized egg implantation, placenta formation, can reduce the excitability of the pregnant uterus, maintain the state of pregnancy; May promote breast development and prepare for breastfeeding. This product can inhibit the release of luteinizing hormone in the anterior pituitary through negative feedback to the hypothalamus, so that the follicles cannot develop and mature, and inhibit the ovulation process of the ovaries [5]-[6]. However, long-term application can cause abnormal liver function and an increase in the incidence of ischemic heart disease; The endometrium atrophy, decreased menstrual flow, predisposing to the development of vaginal fungal infections. Therefore, consider combination with low molecular weight heparin sodium. Heparin is an anticoagulant, which is what people call blood revitalizing drugs. Low-molecular heparin has a smaller molecular weight, so subcutaneous absorption is faster and regular than heparin, bioavailability is higher, and antithrombotic effect is stronger. At the same time, thrombocytopenia and bleeding risk are lower, meaning side effects are smaller [7]. It is generally believed that the anticoagulant effect of heparin is mainly achieved through two aspects: (1) inhibition of thrombin; (2) Inhibit coagulation activity factor Xa (FXa). Both rely on the pentose layout of heparin and the antithrombin III (AT-III) linkage, which enhances the ability of heparin-linked antithrombin III to bind to thrombin and FXa. The antithrombotic effect of heparin requires not only heparin to bind to AT III, but also direct binding of heparin to thrombin, which requires heparin molecules of sufficient length (at least 18 monosaccharide length, at least 5000 D molecules). However, the direct confrontation of heparin with FXa enhances the inhibitory effect of antithrombin III on FXa, and the minimum amount required for this effect is unnecessary heparin. Low molecular weight heparin has a much lower anticoagulant effect than its anti-FXA effect due to its short fragment length, and its molecular length is mostly less than the length of 18 monosaccharides[8].

In summary, progesterone combined with low molecular weight heparin sodium treatment for patients with recurrent miscarriage can effectively improve their coagulation function, regulate their sex hormone levels, and improve labor outcomes.

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The Possible Relationship and Drug Targets of Ischemic Stroke and Dementia in Oxidative Stress

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Abstract: There are multiple mechanisms of pathogenic factors in dementia and ischemic-reperfusion injury, such as oxidative stress (OS) and the reactive oxygen species (ROS). NADPH oxidases (NOXs) have a broad distribution in brain and participate in the oxidative stress and inflammatory responses. It may be efficient to treat this specific target of NOX to establish a balance between reactive oxygen species and antioxidants. This review will elaborate the possible relationship and mechanism between the occurrence of stroke and its complications and focus on NOXs, ROS and inflammatory responses to figure out the possible signaling pathway in the perspective of oxidative stress. And NOX_2 will be focused to demonstrate the relationship between ischemia-reperfusion and pathogenic factors of dementia via the NOX_2/ROS signaling pathway. And considering the upstream and downstream elements and the end results of this signaling pathway, inhibiting NOX_2 activity can reduce oxidative damage and inflammatory responses, NOX_2 can be considered as a drug target to treat stroke development to reduce the risk of severe dementia.

Keywords: Ischemic Stroke; Dementia; The Reactive Oxygen Species

Introduction

As the 3rd leading cause of death, neurodegenerative diseases (NDs) are primarily contributed to cognitive dysfunction[1]. Cognitive dysfunction after stroke has a high morbidity and may influence up to a third of stroke survivors[2][3]. To date, there are some types of drugs that treat cognitive impairment and even dementia, although these have no cure[4][5]. There are several similar pathogenic factors for ischemic stroke and cognitive impairment. Therefore, elucidating the pathogenic mechanism and the interaction between stroke and dementia will help establish effective symptom relief and cognitive impairment prevention strategies. Regard ischemic stroke as a drug target to prevent the occurrence of cognitive impairment, which can reduce the risk and severity of cognitive dysfunction and provide a new thought for drug development to prevent and treat dementia.

Literature Review

1. The possible pathogenic mechanism of NDs

1.1 The source of ROS

As accessory substance of oxidative phosphorylation (OXPHOS), the major formation of ROS occurs in normal oxygen metabolism and the ATP synthesis[6]. One of the source of ROS is active NOXs in cellular mechanism. NOXs are responsible for the phagocytes to fight off infections[6]. The content of mitochondrial ROS increases to cause OS, which imbalances neutralization between the endogenous antioxidant system and strongly oxidizing free radicals [7], and even damages the tissue and neuron.

1.2 Occurrence within ischemic stroke

Within the duration of ischemia, a series of reactions occurred, including depolarizing neurons, increased influx of calcium ions, ATP deficiency and release of the excitatory neurotransmitter[8]. Subsequently receptors activation increases calcium ions inside neurons and NOX signaling pathways so that neuronal death[8]. In fact, some clinical investigations have revealed the relationship between OS and ischemic stroke[9][10] and the part of ROS in inducing neurodegeneration from stroke. A reduction in OS may protect against the complications caused by ischemic stroke[11][12].

1.3 Pathogenic factors in dementia

There are mutiple pathogenic factors about cognitive dysfunction. In the acute stage of ischaemic-reperfusion injury, as blood flow volume to the brain decreases, the concentration of intracellular calcium ions will increase and glutamate release, which is caused by damage to the stability of cellular ions, will lead to excitatory toxicity with inflammation in ischemia[13][14][15][16]. In general, the dangerous factors of cognitive impairment may be similar to those of stroke and cardiovascular diseases[17]. The pathogenic mechanism of dementia is also related to excess ROS(18). And in NDs, immune activation is strongly related to oxidative damage[19][20][21].

2. The role of NOXs in this relationship

In AD and vascular OS, NOXs and mitochondria are thought to be the primary sources of ROS induced by the β-amyloid[17][22]. Some researches show that there is higher expression and activity of the NOX subtypes in the brain in AD mouse than that in wild-type controls[23][24][25]. In neuron cultures treated with β-amyloid, the content of NOX_2 and NOX_4 increase[22][25][26]. There are several NOX subtypes involved in process of OS and neurodegeneration in CNS. And the most relevant NOX isoform with CNS is NOX_2[27][28]. The interactions between pro-inflammatory factors and activated NOXs in microglia drive OS and neuroinflammation[25].

RAGE as receptors contains multiple ligands, are basic pathogenic factors of AD. Indeed, NOX_2 activation is caused by Aβ via RAGE and subsequently leads to dementia. Ischemic stroke and formation of ROS also activate upstream elements of NOX_2. Finally, ROS formation disrupts BBB and causes inflammation to be a possible pathogenic mechanism of dementia. Therefore, NOX_2 deficiency reduces the incidence of oxidative damage and inflammation.

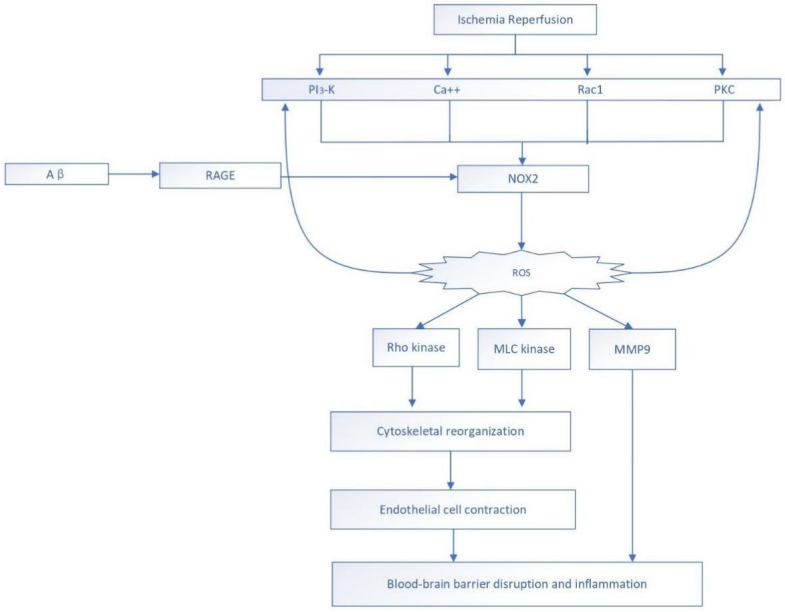

Figure 1. The relationship between ischemic stroke and dementia via NOX_2/ROS signaling pathway.

Conclusion

This review demonstrates the possible relationship between ischemia-reperfusion injury and cognitive dysfunction via the NOX_2/ROS signaling pathway. Subsequently, NOX_2 may be considered as a drug target to treat ischaemia conditions or cognitive impairment via designs of NOX_2 inhibitors. However, NOX_4 and other pathogenic factors also participate in the regulation of ischemic stroke[17]. Therefore, the above factors interact with ROS should also be considered in the relationship between ischemic stroke and dementia to provide a more comprehensive review.

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Comparative Analysis of Laparoscopy Through Single Umbilical Hole and Traditional Laparoscopy

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Abstract: Objective: To explore the standardized application effect of laparoscopy in gynecological clinical medical treatment. Methods: The experiment was carried out in patients admitted to gynecology department in a hospital in China from October 2021 to October 2022. 30 patients were selected as the research subject by random sampling, and 30 patients were divided into two experimental groups by using the digital random table. They were the experimental group and the control group. There were 15 patients in both experimental groups. The control group was treated by conventional Laparoscopy, The experimental group was treated with single hole Laparoscopy via umbilical cord. Result: Through experimental research, the surgical time of patients in the experimental group was longer than that of the control group, but the postoperative exhaust time and surgical water loss scores of patients in this experimental group were better than those in the conventional group, and $P<0.05$; The probability of postoperative complications in the experimental group patients will be significantly lower than that in the control group patients, $P<0.05$. Conclusion: Compared with traditional Laparoscopy, transumbilical single hole Laparoscopy has a better diagnosis and treatment effect, which can further alleviate the pain of patients and enable them to recover as soon as possible.

Keywords: Laparoscopy; Gynecology; Clinical Medical Treatment; Standardization; Application Measures

Introduction

Ectopic pregnancy, Uterine fibroid and other benign gynecological diseases are particularly common among women of gestational age. The focus can be removed by surgery to cure the disease. However, surgery can cause significant trauma to patients and even affect their physical and mental health. There may be residual scar tissue after surgery, making the psychological and physiological stress reactions of patients increasingly severe. And with the improvement of laparoscopic technology, the scar formed by single hole Laparoscopy will be smaller, and it can also meet the needs of patients for beauty and other aspects, and reduce the pain of patients. In this regard, the experiment will take 30 patients with benign gynecological diseases as experimental observation objects, and compare the efficacy of single hole Laparoscopy and traditional Laparoscopy. The current report is as follows.

1. Experimental Data and Methods

1.1 Experimental data

In order to deeply explore the effectiveness of standardized application of laparoscopy in gynecological clinical medical treatment, this article conducted an experiment on patients admitted to a certain hospital in China from October 2021 to October 2022. Thirty patients were randomly selected and divided into two experimental groups based on the principles of consent, informed consent, and voluntary participation. There were 15 patients in each experimental group. The patients in the experimental group were 22 years old at the minimum, 48 years old at the maximum, and the overall average age was 37 years old. There were 7 cases of Ectopic pregnancy, 3 cases of Uterine fibroid, and 5 cases of Ovarian cyst; The patients in

the control group were at least 21 years old and at most 50 years old. The overall average age was 38 years old. There were 5 cases of Ectopic pregnancy, 5 cases of Uterine fibroid, and 5 cases of Ovarian cyst. The basic data of the two experimental groups were comparable, and the statistical validation results were all P>0.05.

1.2 Experimental Methods

In the control group, 15 patients were treated with traditional Laparoscopy, kept lying flat or lithotomy position, fully disinfected the skin at the incision position, and underwent general anesthesia Tracheal intubation, conventional towel laying, vertical or horizontal incision at its upper edge, and pneumoperitoneum was punctured into it to construct an artificial 12mmHg. Three hole method or four hole method was used to place the laparoscopic instrument in it to determine the location of the intracavitary lesions, Dig out Uterine fibroid, remove the uterus, etc., enter the vagina after the operation, remove the focus tissue, and suture the tissue at the stump. The patients in the experimental group need to carry out the single hole Laparoscopy through the umbilical cord, fully disinfect based on the conventional surgical treatment, make a longitudinal incision in the middle of the umbilical cord, gradually cut the skin, expose the peritoneum, protect the blood vessels and nerves, and establish the pneumoperitoneum pressure of 12mmHg in an artificial way. Place the instrument in a single hole tube, determine the location of the lesion, and perform surgical procedures such as excision to suture the wound. Remove the lesion tissue from the patient's vagina and suture the stump. Other patients need to remove the lesion tissue through a single hole channel and suture the umbilical incision. There is no active bleeding in the abdominal cavity, and withdraw the endoscopic instrument. Absorbable sutures should be used to suture the peritoneal layer, etc.

1.3 Observation indicators

Observing the actual surgical treatment situation of patients and setting reasonable experimental indicators, which will include multiple contents such as postoperative exhaust time and surgical blood loss. Evaluate the patient's incision pain at 2 hours, 12 hours, and 24 hours after surgery. Using the micro visual simulation scoring method, the stronger the pain, the higher the score. Observe whether the patient will have a series of complications such as infection and scar residue after surgery.

2. Results

2.1 Surgical treatment of patients in two groups

Table 1 Comparison of surgical treatment between two groups of patients

group	Number of cases	Surgical blood loss（ml）	Postoperative exhaust time（h）	Surgical time consumption（min）	Hospitalization treatment time（d）
experimental group	15	96.5±10.7	24.5±9.3	98.4±12.5	5.5±1.1
control group	15	122.4±11.6	34.2±1.9	81.2±12.1	8.7±0.8
t	-	6.819	6.131	7.022	7.102
P	-	<0.05	<0.05	<0.05	<0.05

2.2 VAS score for postoperative pain in two groups of patients

Table 2 Comparison of postoperative pain VAS scores between two groups of patients

group	Number of cases	postoperative2h	postoperative12h	postoperative24h
experimental group	15	5.4±1.0	4.3±0.5	3.8±0.3
control group	15	6.5±0.9	5.2±0.2	4.8±0.6
t		8.465	9.011	6.037
P		<0.05	<0.05	<0.05

2.3 Postoperative complications in two groups of patients

Table 3 Comparison of postoperative complications between two groups of patients

group	Number of cases	infect	Scar residue	malunion	Total occurrence rate
experimental group	15	1（6.67%）	1（6.67%）	0	2（13.33%）
control group	15	1（6.67%）	2（13.33%）	1（6.67%）	3（20%）
χ^2					8.052
P					<0.05

3. Discussion

Among married women, the incidence rate of Uterine fibroid, Ovarian cyst, etc. is high. If there is no timely intervention for their disease, it is easy to make their condition become more and more serious, and even endanger the patient's own life. The operation form of Laparoscopy used in the past will be relatively simple, which can accurately locate the focus, reduce the time spent in determining the focus during the operation, and prevent patients from being exposed in a large range during the operation. Its treatment effect will be better, but its postoperative incision is extremely easy to leave scars. Moreover, the four hole method and three hole method generally require multiple operation channels, which has a serious impact on the postoperative recovery of patients. Single hole Laparoscopy is a new type of operation under the background of the continuous development of laparoscopic technology. All operations can be completed with only one operation channel during the operation, avoiding multiple incisions, effectively reducing the pain of patients and accelerating the rehabilitation process of patients. This study observed the control group and found that the study group had lower surgical blood loss, postoperative exhaust time, hospitalization time, and pain VAS score than the conventional group ($P<0.05$).

4. Conclusion

To sum up, the standardized application of laparoscopy in gynecological clinical medical treatment can provide more excellent services for patients, and the efficacy of umbilical single hole Laparoscopy will be significant, with strong safety. The postoperative exhaust time will be relatively fast, which can effectively shorten the hospitalization time of patients. It is currently the preferred treatment method for gynecological benign diseases in clinical practice in China, reducing the amount of bleeding during surgery and accelerating the recovery speed of the patient's body system to prevent the formation of various postoperative complications. At the same time, comprehensively improving the clinical treatment effect highlights the value of standardized application of laparoscopy in gynecological clinical medical treatment.

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Clinical Effect of Intranasal Corticosteroids Combined with Nasal Irrigation in the Treatment of Allergic Rhinitis

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Abstract: Objective: To explore the clinical effect of intranasal corticosteroids combined with nasal irrigation in the treatment of allergic rhinitis. Method: 100 patients with allergic rhinitis who received treatment in Shaanxi Provincial People's Hospital from January 2020 to January 2021 were selected as the research subjects. The grouping method adopts a random approach, dividing 100 patients into two groups with 50 patients in each group. They are the control group and the experimental group, respectively. The control group patients were treated with conventional intranasal corticosteroids therapy. The experimental group patients were treated with intranasal corticosteroids combined with nasal irrigation. Two groups of patients are required to undergo treatment and follow-up for 3 and 6 months to compare their quality of life and nasal symptoms after receiving treatment. Result: The quality of life of the experimental group patients was significantly higher than that of the control group. The difference was significant ($P<0.05$); The nasal symptoms of the experimental group patients were significantly reduced compared to the control group patients, with a significant difference ($P<0.05$). Conclusion: The combination of intranasal corticosteroids and nasal irrigation can effectively improve the quality of life and nasal symptoms of patients with allergic rhinitis.

Keywords: Intranasal Corticosteroids; Nasal Irrigation; Allergic Rhinitis

1. Materials and Methods

1.1 General Information

We selected 100 patients who received treatment in Shaanxi Provincial People's Hospital otolaryngology department from January 2020 to January 2021 as the experimental subjects. Using a random allocation method, patients were randomly assigned to two groups. One group used conventional treatment methods, while the other group used intranasal corticosteroids combined with nasal irrigation treatment on the basis of conventional treatment methods. The control group patients were treated with conventional treatment methods, while the experimental group patients were treated with intranasal corticosteroids combined with nasal irrigation. Collect relevant data through follow-up surveys for 3 and 6 months to understand the patient's disease recovery and quality of life after receiving treatment. There were 28 males and 22 females in the control group. The average age is (34.14 ± 3.22) years old; There were 27 males and 23 females in the experimental group, with an average age of (38.01 ± 2.01) years. There was no significant difference in gender, age, and other aspects between the two groups of patients ($P>0.05$), indicating comparability.

1.2 Method

The patients in the control group were treated with intranasal corticosteroids, 2.56 μ g/d Budesonide nasal spray, and

instructed to spray twice on both nostrils. Two weeks later, the spray dose was reduced. The course of treatment was one month, and the follow-up investigation and return visit were three months and six months. On the basis of intranasal corticosteroids therapy, patients in the experimental group were given nasal irrigation. The specific steps were as follows: select the same type of washer, add it to 250mL of physiological saline (40 ℃), and instruct patients to wash both nasal cavities after waking up in the morning and before going to bed at night. Use spray agent (ensure the same model) for injection. Spray twice into both nasal cavities, once a day, continuously for a month. Rinsing method: Instruct the patient to tilt their head forward, slowly and gently place the head of the washer on the outside of the nostrils, and inform the patient to open their mouth slightly during rinsing. Do not swallow saliva or speak, and breathe slowly with their mouth. The rinser squeezes the washer balloon, injects 40 ℃ physiological saline into the nasopharynx and one side of the nasal cavity, and then flows out through the other side of the nasal cavity or mouth. Move the head of the washer away from the nostril and use the same method to clean the other side of the nasal cavity. Patients are required to undergo follow-up surveys and research for 3 and 6 months, respectively. Maintain a follow-up level and record the patient's nasal recovery and quality of life after treatment.

1.3 Observation indicators:

(1) Observe and compare the quality of life of two groups of patients after treatment. This includes emotional issues, behavioral issues, sleep quality, and daily activities. (2) Observe and compare the nasal symptoms of two groups of patients after treatment. This includes runny nose, sneezing, itchy nose, and nasal congestion.

1.4 Statistical methods

Analyzing using SPSS 20.0 software. The counting data is represented by ($x \pm s$), t-test is used, and the measurement data is represented by (%). Selecting 2-test ($P<0.05$) indicates the existence of differences and comparability.

2. Results

2.1 Comparison of VAS scores for nasal symptoms between two groups of patients before and after treatment

Before treatment, there was no statistically significant difference in VAS scores of nasal symptoms between the two groups of patients (0>0.05); After 3 months of treatment, the VAS scores of nasal symptoms (nasal congestion, itching, sneezing, and runny nose) in both groups of patients decreased significantly compared to before treatment ($P<0.05$), and the VAS scores of all symptoms in the experimental group were lower than those in the control group ($P<0.05$).

2.2 Comparison of RQLQ scores between two groups of patients before and after treatment

Before treatment, there was no statistically significant difference between the two groups in nasal symptom scores, eye symptom scores, non nasal eye symptom scores, daily activity scores, sleep problem scores, behavioral problem scores, and emotional problem scores ($P>0.05$); After treatment, the RQLQ scores of both groups were significantly improved. Except for sleep and behavioral problems, the RQLQ scores of the control group were lower than those of the experimental group (CP<0.05).

2.3 Comparison of treatment effectiveness between two groups of patients

After 3 months of treatment, the effective rate of treatment in the experimental group (94.12%) was significantly higher than that in the control group (81.67%) ($P<0.05$).

3. Discussion

In recent years, the incidence rate of Allergic rhinitis is rising. The clinical manifestations of patients with Allergic rhinitis include nasal congestion, nasal itching, runny nose, sneezing and other symptoms. The disease can only be alleviated

by drugs in clinical practice, but can not be eradicated. In this way, it will bring huge living and economic burdens to the families of patients. Allergic rhinitis is a complex and hereditary disease. Mainly caused by immunoglobulin mediators. The participation of cytokines and immune active cells in the body leads to. At present, how to control or thoroughly cure Allergic rhinitis is the focus of clinical research. The current main research focus is on avoiding allergen exposure. Reasonably use intranasal corticosteroids or complete nasal cleaning. By using various intranasal corticosteroids, completing treatment work can effectively control the symptoms of allergic rhinitis. intranasal corticosteroids data is the main method of current treatment work, but if this method is used for a long time, patients will be affected by some side effects, which will lead to rejection of disease treatment. Compared to traditional treatment methods, changing the use of nasal irrigation has the characteristics of safety and simple operation, making it easier for patients to receive treatment during this process.

How to effectively control AR - straight is a hot research topic for otolaryngologists. Nasal glucocorticoid therapy is the most effective first-line treatment plan for AR, and ARIA guidelines strongly recommend it for treating AR. However, the side effects of long-term use of glucocorticoids make patients feel fearful and resistant, Moreover, for severe AR patients, the effect of nasal corticosteroids alone is not ideal. In recent years, nasal irrigation therapy has been widely used due to its simple operation, safety, and effectiveness, making it easier for patients to accept. Similarly, the efficacy of nasal irrigation alone for severe AR is also limited. This study conducted a Case–control study. The results showed that the nasal symptoms of the two groups were significantly improved after treatment, and the VAS scores of nasal congestion, nasal itching, sneezing and runny nose in the two groups were significantly lower than those before treatment ($CP<0.05$), and the scores of all symptoms in the experimental group were lower than those in the control group ($CP<0.05$); The treatment work requires completing follow-up studies for 3 and 6 months. By using combination therapy, the quality of life of the experimental group patients was significantly higher than that of the control group. Severe Allergic rhinitis patients will have edema of the internal nasal mucosa, which will lead to the narrowing of the patient's respiratory tract. A large amount of secretions may appear in the patient's nose. Traditional treatment methods cannot solve problems. The presence of various mucosal secretions in the patient's affected area ultimately affects drug reception. Physiological saline nasal irrigation has the effect of mechanically clearing nasal secretions, reducing local inflammatory factors, reducing mucosal congestion, and improving nasal mucociliary oscillation function. Fluticasone propionate has strong anti-inflammatory activity and little systemic activity when administered locally to the nasal mucosa. The combination of the two can play a synergistic role and achieve better clinical efficacy.

Through relevant research, it has been shown that the quality of life of the experimental group patients is better than that of the control group patients, with relatively mild nasal symptoms and better recovery effects. Therefore, this indicates that the combination of intranasal corticosteroids and nasal cleaning for the treatment of allergic rhinitis patients has better clinical efficacy, reduces patient symptoms, and fully utilizes its synergistic effect.

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Etiology Analysis and Treatment Discussion of Senile Vertigo Patients in Neurology Department

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Abstract: **Objective:** To analyze the etiology and therapeutic effect of elderly patients with vertigo in the Department of Neurology and clarify the importance of scientific treatment in senile vertigo patients. **Methods:** 32 senile vertigo patients were selected as research objects and divided into a control group and an experimental group according to the different treatment methods, with 16 cases in each group. The control group was treated with conventional Western medicine, while the experimental group was treated with additional traditional Chinese medicine massage therapy on the basis of Western medicine. The etiologies and therapeutic effects were analyzed and compared between the two groups of patients. **Results:** The etiologies of senile vertigo patients mainly include chronic subjective dizziness, benign paroxysmal positional dizziness, posterior circulation ischemia, mood disorders, vestibular neuritis and migraine, etc. Among them, the first two are the most common etiologies, the rate of chronic subjective dizziness reached up to 36%, and the benign paroxysmal positional dizziness was 27%. In addition, the total effective rate of the experimental group was 98%, which was higher than that of the control group (76%), and the difference was statistically significant ($P<0.05$). **Conclusion:** Integrating traditional Chinese massage therapy with Western medicine can help senile patients effectively control their disease condition and continuously improve their overall therapeutic effects.

Keywords: Neurology Department; Senile Vertigo; Etiology Analysis; Evaluation of Therapeutic Effects

Introduction

Vertigo is a relatively common central nervous system disease in clinical practice, which is mostly seen in middle-aged and elderly patients. With the increase of age, the incidence rate of vertigo is also rising, and gradually becomes a serious central nervous system disease. Drowsy refers to being unable to stand, or having a confusing of space and time, so that people have a feeling of spinning. The occurrence of vertigo generally has to go to a regular medical institution for relevant examination, you can choose to go to the ear, nose and throat department or neurological specialists. Because the body immunity of the elderly is lower than that of the young, it is very important to explore its pathogenesis and treatment effect, but so far there is still no clear conclusion on its pathogenesis, which is a difficult problem to be answered clinically. We collected 32 elderly patients from October 1992 to March 2004 and analyzed their etiology, characteristics, management, and outcomes.

1. Data and methods

1.1 General information

In this study, 32 senile vertigo patients hospitalized in the neurology department of our hospital from October 2019 to March 2021 were randomly divided into two groups: 16 patients in the observation group and 16 patients in the control group. The onset is January to February. One year after surgery, the course of disease in both groups was 1 year. Conclusion: There was no significant difference in the general information between the observation group and the control group (P <

0.05) [1].

1.2 Research methods

Observation group: For patients with acute vertigo, intramuscular injection with dosage 25-50mg can be used. During the interval between vertigo, medication , sibylline can be used, the patients can take orally, 10 mg/time per day. At the same time, the drugs used can be selected, and 20ml intravenous injection can be given to the patient once a day. Instruct the patient to take oral aspirin enteric coated, 75mg each time, once a day. The patient was instructed to take aspirin orally, 75mg, once a day. The treatment was carried out for 14 days according to the above treatment plan. Control group: In the early stage of coma, Intramuscular injection of 5-10 mg analgesic. If the patient experiences vertigo, they need to take 75 milligrams aspirin enteric once a day. If it is intravenous infusion, 20ml of Danshen Injection can be taken orally for 14 consecutive days[2].

1.3 The evaluation indicators are based on whether they are effective and improved

Treatment effect: the feeling of vertigo disappeared, no recurrence within a month. Curative effect: The patient had vertigo and other feelings one month after surgery, and there was a significant improvement. Ineffective: The patient's vertigo and other discomfort have not been significantly relieved, and there are repeated cases[3].

1.4 Statistical methods SPSS 11.5 was used as the processing tool for data processing and variance analysis

The statistical analysis of t2 and secondary factors was carried out on single factor and secondary factor. When the two methods are compared($P<0.05$), which indicates that the comparison between the two methods is relatively statistically significant[4].

2. Research results:

2.1 Etiological analysis of vertigo in 32 patients selected

After clinical diagnosis of patients and analysis of its etiology, the results showed that the proportion of vertigo caused by various causes was significantly different. In this research, the main cause of vertigo in patients was posterior circulation ischemia (43.75%). mental factor (25.00%). Table 1 for details.

Table 1 Etiology and data analysis of vertigo in 32 patients

Etiology	Number	Proportion(%)	Summary[n(%)]
Posterior Circulation Ischemia	14	43.75	14(43.75)
Mental Factor	8	25	22(68.75)
Unexplained Perivestibular Vertigo	4	12.5	26(81.25)
Benign Episodic Positional Vertigo	4	12.5	30(93.75)
Other Factors	2	6.25	32(100)

2.2 Comparison of clinical treatment effect between the two groups

After corresponding treatment, among the patients in the observation group, 11 cases had obvious effect, accounting for 68.75%; 4 cases had common effect, accounting for 25.00%; 1 case had little effect, accounting for ineffective, accounting

for 6.25%; and the total effective rate reached up to 93.75%. In the control group, there were 6 patients with obvious effect, accounting for 37.50%; 6 patients with common effect, accounting for 37.50%; 4 patients with ineffective response, accounting for 25.00%; the total effective rate was 75.00%. After statistical process, there were significant differences in total clinical effect rate between the two groups ($P<0.05$) [5].

3. Discussion

In recent years, due to the change of lifestyle, the increase of life pressure and the lack of physical exercise and other factors, the incidence of vertigo in our country has increased year by year, and there is a tendency towards youthfulness. When patients have vertigo, they mainly rotate their eyes, which is because the connection between patients and the outside world is abnormal in the conduction process of the cerebral cortex, resulting in patients with rotation,flopping, falling and other feelings, and serious patients will also have a series of symptoms such as nausea and vomiting. While the patient is receiving treatment, the patient may experience increased blood pressure and other autonomic disease. Because vertigo has the characteristics of repeated and frequent, it not only causes obvious interference to the daily work of patients, but also causes obvious interference to the mood of patients, leading to adverse reactions such as sleep disorders in patients, therefore a decline in the quality of life of patients will occurs.

In this research, it was found that the main cause of the disease was insufficient blood supply in the posterior circulation, with an incidence of 43.75%, while the psychological cause was also the cause of the disease, with an incidence of 25.00%. In terms of therapeutic effect, patients in the observation group were treated according to different patients. Patients in the acute stage were treated with promethazine, and patients in the intermittent stage were treated with flunarizine capsules, aspirin enteric-coated tablets and breviscapine, and the total effective rate was 93.75%.

In the control group, patients were treated with Diazepam during acute attacks and salvianaspirin enteric-coated tablets during intermittent attacks. The total effective rate of the control group was 75.00%, and the therapeutic effect of the observation group was significantly better than that of the control group. In terms of the probability of co-morbidity and sudden death, patients in the experimental group were obviously relatively safe, without sudden death. In the elderly, attention should be paid not only to patients with posterior circulation ischemia, but also to the causes of vertigo and mental status of patients [6], and whether patients have symptoms such as depression and anxiety. In order to better improve the treatment success rate of patients, appropriate treatment methods should be adopted according to the etiology of patients and different types of therapeutic methods should be given.

Aspirin, salvia miltiorrhiza injection, promethazine and flunarizine were the main treatment methods. The quality of life, therapeutic efficacy and symptom scores of the observation groups were better than those of the control group. It can be seen that combined application of aspirin and salvia miltiorrhiza injection， promethazine and flunarizine were added can effectively improve the therapeutic effect of patients, accelerate the speed of symptom relief of patients, and thus improve the quality of life of patients. Aspirin and salviorrhiza injection are both anticoagulant drugs, and aspirin plays a good role in inhibiting the production of clotting factors.

Among them, promethazine has the effect of inhibiting H1 receptor, and its effect in treating vertigo is mainly manifested in: it has a good central sedative effect, which can quickly reduce patients' fear, anxiety, tension and other negative emotions; This product is a strong antihistamine drug, which can maintain microcirculation permeability, prevent local edema caused by vascular dilation, inhibit thrombus formation, and has good antihistamine effect; It has a strong anti-syncope and choline inhibition effect, so it can reduce the patients' feeling of vertigo, and can relieve vomiting, deafness, tinnitus and other symptoms, and can make the local blood flow of the brain faster, faster circulation, with significant curative effect. As a calcium reservoir blocking drug, flununlizine hydrochloride can maintain vascular permeability, reduce vascular constriction hemorheological changes by inhibiting calcium reservoir in calcium reservoir. Especially for the neck and other body parts, this product has obvious inhibition of vasoconstriction, can effectively prevent long-term contraction of

blood vessels. In addition, this product also has the effect of protecting the heart muscle, anti-epilepsy, etc., because of the effect of this product is more, so it is often used in senile patients with vertigo. The use of quadruple treatment is mainly because there are many kinds of vertigo symptoms in the elderly, so the four drugs can simultaneously treat different vertigo symptoms, so as to achieve the purpose of enhancing the efficacy.

In short, there are many factors that cause vertigo in the elderly, and the most common etiology is posterior circulation ischemia and perivestibular dizziness. According to the main etiology, the four-drug combination has better efficacy than the two-drug combination, and can quickly improve the quality of life of patients, and it is worth to promote in clinical practice.

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