

Influencing Factors and Etiological Analysis of Incision Infection after Abdominal Surgery in Patients with Multiple Traumas

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Abstract: Objective: To analyze the influencing factors and etiological characteristics of postoperative incision infection in patients with multiple traumas. **Methods:** A retrospective analysis was carried out on the clinical case data of 195 patients with multiple trauma who underwent abdominal surgery in our hospital. All patients were admitted to the hospital from January 2016 to December 2021. According to the information obtained, the postoperative incision infection and pathogen distribution of the patients were counted, and the risk factors affecting postoperative incision infection were analyzed. **Results:** According to the analysis, after abdominal surgery, 38 patients had incision infection, and the infection rate was 19.49%. Through the cultivation of pathogenic bacteria, there were 54 strains of pathogenic bacteria, and the highest proportion was gram-negative bacteria, which was 59.26%, and the lowest was fungus at 9.26%; through univariate analysis, it was found that age, hospital stay, white blood cells, albumin, diabetes, C-reactive protein, blood loss and ISS score between the infected and uninfected groups. There was a significant difference ($P < 0.05$); multivariate logistic regression analysis found that incision infection in patients with multiple traumas after abdominal surgery was associated with increased age, increased albumin level, combined diabetes, increased blood loss and ISS score factors ($P < 0.05$). **Conclusion:** For patients with multiple traumas who underwent abdominal surgery, the probability of postoperative incision infection was higher, and gram-negative bacteria were the main pathogenic bacteria, and postoperative infection was not only related to one factor, but it is related to a variety of factors, and appropriate amount of antibiotics should be given according to the actual situation of the patient.

Keywords: Multiple Traumas; Abdominal Surgery; Incision Infection; Etiology

Introduction

Multiple traumas have a high incidence in clinical practice. The tissues and organs of such patients have been damaged to varying degrees. The patient's condition is very critical, and a large amount of blood loss is prone to occur, which seriously threatens the life safety of the patient [1]. Therefore, patients need to receive surgical treatment as soon as possible to control the amount of bleeding and improve the survival rate of patients. However, the surgery is invasive and prone to incision infection after surgery, which not only aggravates the patient's condition, but also increases the risk of death. In view of this, this study selected multiple trauma patients who underwent abdominal surgery in our hospital, and analyzed the influencing factors and pathogenic bacteria characteristics of postoperative incision infection according to the patient's case data, hoping to provide reference for clinical disease treatment.

1. Materials and methods

1.1 Normal information

A total of 195 patients with multiple traumas admitted to our hospital from January 2016 to December 2021 were selected for analysis. All patients received abdominal surgery. After surgery, patients were divided into two groups according to the presence or absence of incision infection, namely, patients without incision infection were classified as non-infection group, with 157 cases in total. There were 38 cases of incision infection in the infection group.

1.2 Methods

All patient data were collected, including basic data, past history, surgical conditions and laboratory tests. The collected information and data were sorted out, and retrospectively analyzed, and statistical analysis was performed on all single factors. Determine the influencing factors of postoperative incision infection. After the surgical treatment is completed, the patient needs to be given routine care according to the nursing requirements of the department, and the incision of the patient should be closely observed. The cotton swab is dipped in the foreign body at the incision, the collection volume is 2ml, the collected specimen is placed in a sterile test tube, and the specimen is sent to the laboratory for testing in the shortest time, and the analysis of pathogenic bacteria is analyzed and identified.

1.3 Statistical methods

Input the data into SPSS21.0 system software for calculation, use ($\bar{x} \pm s$) for measurement statistics, use (%) for count statistics, t test and χ^2 test, $P < 0.05$ means statistical significance.

2. Results

2.1 The ratio of patients with incision infection and pathogenic bacteria

Among the 195 patients in this study, after postoperative statistics, it was found that 38 patients developed incision infection after surgery, accounting for 19.49% of the total number of patients. The infected patients were cultured with pathogenic bacteria, and the number of strains cultivated was 54, of which 54 strains were cultivated. Gram-negative bacteria were the most common, followed by gram-positive bacteria and fungi. The number and proportion of strains were 32 (59.26%), 17 (31.48%), and 5 (9.26%), respectively. See Table 1.

Table 1 The composition ratio of pathogenic bacteria in patients with incision infection

Pathogens	Number of plants (n=54)	Composition ratio (%)
Gram-negative bacteria	32	59.26
Gram-positive bacteria	17	31.48
Fungus	5	9.26

2.2 Univariate analysis of patients with postoperative incision infection

Univariate analysis of the patients showed that there was no significant difference in gender and hemoglobin between the infected group and the uninfected group ($P > 0.05$), while the age, hospital stay, white blood cells, albumin, diabetes mellitus, C-reactive protein, bleeding volume and trauma severity score (ISS) were compared and analyzed, and there was a significant difference between the two groups ($P < 0.05$).

Table 2 Univariate analysis of patients with postoperative incision infection

Clinical features		Infected group (n=38)	Uninfected group (n=157)	<i>t/x²</i>	<i>P</i>
Gender	Male	28	95	2.280	>0.05
	Female	10	62		
Age(years)		47.48±11.38	41.62±10.97	2.933	<0.05
Combined diabetes	Yes	17	18	4.457	<0.05
	No	48	112		
Hospital stay (d)		14.35±5.29	8.73±3.80	7.531	<0.05
Hemoglobin (g/L)		125.06±13.04	118.92±14.63	2.369	<0.05
Leukocyte (10 ⁹ /L)		12.38±3.59	8.40±2.43	8.180	<0.05
Albumin (g/L)		28.57±9.73	33.62±6.18	3.990	<0.05
C-reactive protein (mg/L)		23.49±7.26	17.34±6.49	5.120	<0.05
ISS score (score)		16.81±5.42	10.59±4.91	6.865	<0.05
Bleeding (ml)		584.37±183.05	354.28±117.26	9.610	<0.05

3. Discussion

The results of this study showed that after abdominal surgery in 195 patients with multiple traumas, some patients developed incision infection, a total of 38 cases, and the infection rate was 19.49%. Pathogenic bacteria were cultured in 38 infected patients, and 54 strains were cultivated. Among them, the most distributed strains were gram-negative bacteria, with 32 strains, accounting for 59.26 of the totals, followed by gram-positive bacteria and gram-positive bacteria. For fungi, the number of strains was 17 and 5, accounting for 31.48% and 9.26%, respectively. From this, it can be known that in abdominal surgery of patients with multiple traumas, it is necessary to select appropriate antibiotics according to the actual situation of the patients, and take antibiotics treatment as soon as possible, which has a positive effect on preventing infection.

This study also found that with the increase of age, ISS score, diabetes mellitus, decreased albumin level, and increased blood loss. These factors were all important risk factors for postoperative incision. With the increase of age, various functions of the body gradually decline, and the resistance and immunity are significantly reduced. After the body is traumatized, it is easy to cause infection. The ISS score is closely related to the severity of the patient's trauma. The higher the score, the more serious the patient's condition, and the higher the risk of postoperative incision infection [2]. In diabetic patients, the ability to metabolize blood sugar decreases, and the blood sugar level in the body increases. In this state, the patient's immune function will decline, resulting in an increased risk of pathogen invasion, and the high blood sugar environment provides favorable conditions for the growth and reproduction of pathogenic bacteria. conditions that increase the risk of infection [3]. Albumin is closely related to the body's resistance, and a decrease in its level will lead to a decline in resistance, thereby increasing the risk of infection. When the amount of bleeding in patients increases during surgery, the effective circulating blood volume of the body will be reduced, resulting in protein loss, the decline of body's ability to resist pathogenic bacteria infection, and the increase of incision infection rate. Therefore, for the above-mentioned high-risk groups, it is necessary to strengthen the observation of the condition after surgery, and to give the patients antibiotics in a

timely manner. When using antibiotics, it is necessary to pay attention to the addition of gram-negative bacteria sensitive drugs, so as to better prevent infection.

References

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