Universe Scientific Publishing

ORIGINAL ARTICLE

Oncology treatment and complications of treatment strategies review

Qu Xuening

Baotou City View Medical School, Baotou 014040, Inner Mongolia Autonomous Region, China

Abstract: The tumor surgical treatment and oncology radiation therapy served as medical oncology that contributes to prime importance in comprehensive treatment of malignant tumors. In recent years, various complications roused among the after treatment oncology patients and new treatment measures as increasing cause for concern for patients may vary. The use of individualized integrated treatment method is able to improve the treatment complications. The enhancement on the patient's overall quality of life has important significance in clinical practice.

Keywords: Oncology; Complication; Treatment

Overview

In this modern society, human's living standards and quality has been greatly improved. However, the aging phenomenon is constantly increasing with elderly, inevitably leading to a number of diseases, including cancer as one of the predominant disease. At the same time, the environmental pollution, diet changes and heavy work load leads to stress that are common in middle-aged humans which eventually weaken body immune system. Surprisingly, tumor incidence rate is rising every year. For the past 50 years, the incidence of cancer has been on the rise, but the occurrence of the spectrum of cancer varies. Particularlty, cancer occurrence in large cities and developed coastal areas has increased substantially, mainly due to lifestyle and diet. Clinical cancer related diseases have become one of the high risk in people's health. The treatment of cancer patients was performed mainly through chemotherapy, radiation or surgery. Although chemotherapy is able to reach a certain therapeutic effect, but its side effects would compromise the patient's immunity subsequently leading to multiple complications. Thus, there is a need for research and analysis to develop effective treatment programs. These treatments can be implemented to achieve the best therapeutic effect.

Medical Oncology

Tumor Definition

Cancer can be defined as in living organisms, genetic, malnutrition, endocrine disorders, stress and other internal factors and long-term effects of physical, chemical, biological and other external factors, local tissue of normal cells of a qualitative change in the genetic levels, that lost normal regulation of growth, the gene expression disorder, with different degrees of differentiation and maturation.

doi: 10.18686/aem.v5i1.65

This describes in lost the ability to divide and cause abnormal proliferation and formation of local mass. The activities and genetic characteristics of the tumor cells and normal cells are biologically different. Due to changes in the genetic sequence, mutations in cell proliferation will continue to copy the genetic sequence. Even tumor cells from the tumorigenic effects of above factors are able to multiply indefinitely, and can be transferred to other sites. In medicine, cancer refers to malignant tumors of epithelial origin, malignant tumor is the most common type. Correspondingly, it originated in the malignant mesenchymal tissue collectively known as sarcomas. Usually people will classify all malignancies generally termed as "cancer". Inflammatory response manifested as difficult to cure or hyperplasia. Tumourigenesis is a multi-gene, the results of a multi-step mutation. Different genetic mutations have varying intensity mutagenesis to form different tumour.

Clinical manifestations of malignant tumours

Malignant tumours generally divided into local manifestations and systemic symptoms. Local manifestations include:

(1) Mass: The formation of lumps tumor cell proliferation presence can be found by soft palpation on the surface or deep palpation. Malignancies including cancer tumor rapid growth, the surface are non-smooth, easy to promote to benign stage and benign surface is generally smooth, ease in surface sliding. Some of the organ unable to examined by direct touch, required chest X-ray or CT scan equipment for the examination.

(2) Pain: Tumor expansive growth or lacerations, infection till peripheral nerve, nerve irritation or compression of dry appear as localized pain. Commonly occur in the middle and late.

(3) Ulcer: Occurred in the body surface or tumors of the gastrointestinal tract. High growth rate of tumours could lead to insufficient blood supply and caused tissue necrosis or secondary infections that form ulcers.

(4) Bleeding: Carcinoma vascular invasion or cancerous tissue rupture of small blood vessels.

(5) Obstruction: The rapid growth of cancerous tissue could cause obstruction of cavity organs. As a result, site of obstruction of different tumour with different symptoms.

(6) Others: Bone fractures can lead to tumor invasion, liver cancer caused by reducing serum albumin caused ascites. Tumor metastasis occurred with corresponding symptoms, such as regional lymph node enlargement.

Systemic symptoms include: Early malignant tumour has no obvious symptoms. Malignant tumour patients commonly have non-specific symptoms of weight loss, anorexia, cachexia, excessive sweating (night sweats), anemia and fatigue. Some parts of the tumor can present the corresponding low or hyperthyroidism, secondary systemic changes such as the adrenal pheochromocytomas cause hypertension. In addition, some tumors such as lung cancer, due to the generation of endocrine substances, produce and transfer of systemic symptoms unrelated to consumption, ie paraneoplastic syndrome[1].

Stages of Tumour

According to tumorigenesis and tumor development categorized in five stages:

1) Precancerous: The cells have undergone some changes, but bi-directional development.

2) Carcinoma in situ (commonly referred to as stage 0): a group of abnormal cells in the body.

3) Invasive carcinoma (T stands for general use): Tumor cells have been made to the depths of the site occurred (*e.g.* submucosal) infiltration.

4) Local or regional lymph node metastasis (N stands for general use): Tumor cells from the tissue along the lymphatic metastasis to the lymph nodes.

5) Distant spread (M stands for general use): refers to the transfer of tumor cells with the blood flow to distant organs.

Status medical oncology

In 1946 American doctors Gilman and Philips published the results of the application of nitrogen mustard treatment of

lymphoma, marking the beginning of modern oncology treatment in the true sense, the United States which was established in 1965, followed by the Society of Clinical Oncology (ASCO), 1976, and European establishment oncology (ESMO), held its first session in 2007. China Great China medical oncology (CCMO) is important in the history of our oncology development were considered milestones.

Oncology is a rapidly developing field in the application of drugs, endocrine, biological and gene therapies for cancer patients. The integrated treatment of cancer with drug treatment has equal importance as medical treatment, surgical treatment and radiotherapy.

Over the past half century, medical oncology treatment has established a number of important concepts of biology and pharmacology including therapeutic targets, and the sensitivity of tumor cell heterogeneity, drugs administration methods, dose strength, host factors on treatment effect and intergrated chemotherapy, endocrine therapy, biological therapy. The progress made in all areas of cancer research achieved such as tumor biology, new anticancer drugs and new mechanisms, chemoprevention, monoclonal antibodies, molecular biology promoted medical advances in the treatment[2–5].

Classification of tumor treatment

Up to date,there are 7 effective strategies to treat tumors:

1) Surgery, radiation therapy, laser, cryoablation and ethanol injection to eliminate the cancer cells, anticancer drugs or injection of certain viruses to kill tumour, which is the use of physical, chemical or biological method for treatment of neoplastic diseases.

2) Administration of different types of anticancer drugs for metastasis inhibition.

3) Targeted therapy, monoclonal antibody used to block tumor specific receptors displayed at the cell surface, mainly growth factor receptor.

4) Biological treatment by the body own resistance towards the disease.

5) Change the regulation of tumor gene therapy.

6) Inhibition of cancer cells by blocking tumor angiogenesis.

7) Organ transplantation.

Comprehensive treatment of malignant tumours is based on the type, nature, phase, trend, rational, systematic treatment of the intergrated application in the several existing treatment methods. The aim is to study substantial increase in the curing process and improvements in the patient's quality of life.

Chemical treatment was the fundamental cancer treatment. In other countries, the chemicals used to treat Lymphoma tumor success begins with nitrogen mustard therapy.

Cyclophosphamide and 5-fluorouracil began to implement in clinical cancer therapy. Anthracycline drugs such as Doxorubicin (Adriamycin®), platinum agents such as cisplatin and carboplatin was used in cancer treatment in testicular seminoma, choriocarcinoma, acute lymphoblastic leukemia and non-Hodgkin's lymphoma to achieve radical results.

Tumour complications

Complication types

Tumours are frequently occurring clinical disease. Since the scope of application of surgical treatment and therapeutic opportunity has certain limitations, patients usually choose radiotherapy and chemotherapy. Both radiation and chemotherapy do not only inhibit the sensitive tumour cells, but also had a negative impact on normal cells. This occurrence was especially in the cells proliferation stage during chemotherapy administration in the patients that could result in adverse reactions to systemic or local side effects, shock or even life threatening. This could affect the smooth

administration of chemotherapy. Therefore, in the event of undergoing chemotherapy of radiotherapy, exposure to body and the tolerance issues of vital organs such as the bone marrow, liver, kidney, heart function, and gastrointestinal mucosal should be taken into account. To protect these body parts and organs, the dosage of chemotherapy and radiation were monitored with restrictions.

There were even more complications in the process of radiation therapy and chemotherapy; such as hair loss, gastrointestinal reaction, myelosuppression, infection, shock. Infection do occurred; such as oral ulcers, pneumonia, urinary tract infections, peritonitis, shingles, etc. This is a serious issue that affect the quality of life[7] to the extend where the patients were unable to care for their own self. At the point where the patient realized their own health condition, they are psychologically unable to overcome their emotion. This creates high psychological burden, moreover, to an understanding of long term chemotherapy requirement. This prolong burden of economic and psychological is not an easy task for an ordinary people, often there will be conflict, fear, pessimism, anxiety, depression, and other negative emotions. These will affect the therapeutic effect and patient compliance to a large extend and the determination of ways to make consultation for oncology patients with the patients complications under critical.

Specific complications for adjuvant therapy

In medical oncology department for chemotherapy treatment, a number of patients suffer complications during the time of observation and analysis. Patients with complications were given adjuvant therapy. Patient were fully prepared according to the specific requirements set the appropriate treatment program prior to chemotherapy, and the clinical response in patients was closely monitoring and measurement. Specific adjuvant therapy was carried out according to individual patient with specific complications circumstances that includes the content of (psychological care, medication and dietary guidance), treatment drugs include antidepressants, antianxiety drugs, also includes antidiarrheal drugs, antiemetics drugs, and blood cell growth drugs. In general, chemotherapy patients may be associated with variety of negative emotions, hair loss, gastrointestinal disorders, drug extravasation and other infectious complication. Proactive comprehensive nursing should be implemented to reduce complications, improve patient compliance and degree of nursing satisfaction. Appropriate treatment measures are as follows:

1) Gastrointestinal tract response is a common complication of chemotherapy, the incidence of up to 60%, severe nausea and vomiting in chemotherapy patients could create a fear in them. Chemotherapy drugs cause nausea, vomiting mechanism mainly because these drugs can cause gastrointestinal mucosal injury, stimulate intestinal epithelial pheochromocytoma release 5-HT to stimulate vagal afferent 5-HT receptors, thus central vomiting system initiated that could cause nausea, vomiting and other gastrointestinal reactions. If vomiting and other symptoms developed, the patients may be given dopamine receptor blockers drugs and acid-suppressing drugs, such as palonosetron hydrochloride[8–9]. Intravenous injection of drugs hastens the effect to reduce gastrointestinal reactions during chemotherapy. On the other hand, nurse and relatives of patients that converse more about a number of topics to the patients interest could help in reducing gastrointestinal symptoms in patients by diverting attention and maintain pleasant mood. In the point of patients feels sick, patients should be encourage to take a deep breath. The patient vomiting head position should be sideways to avoid aspiration; intake and output, appropriate rehydration in patients with severe vomiting should be recorded. Careful guidance by nursing staff was given to patients while giving appropriate anti-nausea drug to patients with severe fluid replacement.

2) Cancer patients use more immunosuppressive agents, cytotoxic drugs, anticancer drugs, and these drugs have severe inhibition of bone marrow hematopoietic function. This would lead to reduction in number of white blood cells in patients, weakened prevention function mononuclear phagocytic system, damage the body's normal immune barrier,

eventually the patients prone to infection. Infection is one of the most common complications in cancer patients during treatment, and the patient if not treated in limited time; the patient's life constitutes a serious threat. Therefore, specimen collection is the first step and follows by treatment depending on the circumstances. These basic principles at present is to use the basic mode of antibiotic therapy, in which broad-spectrum antibiotics such as cephalosporins were used in conjunction with, antibiotics, it has become the standard mode. During the examination of the patient, observation of physical condition and the bacteria found in patients should provide with reasonable drug combinations. For example, positive patients use antibiotics generally from 10 days to 14 days; for patients with negative results, even if there is no corresponding symptoms also required medication against bacteria, until the concentration of neutrophils more than 0.5 × 109 / L; that indicate as negative, but symptoms occur with fever and neutropenia patients, need to consider the possibility of other assisted infection. Especially the more difficult to treat fungal infections fluconazole or broad-spectrum antibiotics, etc., and viral infections can consider the use of ribavirin, acyclovir and other drugs. According to patients current situation of disinfection and isolation, adequate nutrition and rest to strengthen and enhance immune system and other treatment ensured with internal ward ventilation, reduce family heuristic. The patient with severe infection, antibiotic medication required to carry out.

3) There are a number of issues and unstable emotions for post-chemotherapy patients psychologically, the nurses responsible to communicate with the patient, timely order counseling, further to eliminate the negative emotions in the time to combat the disease with full confidence.

4) Cancer is a non-functional cell, cancer cells captured more nutrients in the body compared to normal cells that leads to malnutrition for normal cells resulting in decreased in immune system. In terms of diet, proper nursing staff required for patients treatment and guidance, guidance in patients light free food, easily digestible and less food stimulation. Moreover, the nurses should encourage the patient to consume food that rich in vitamins, calorie and high-protein foods[10]. This will naturally help the patients for the nutrition; enhance their resistance, by recording on the patient's record defecation, and timely treatment, to avoid the occurrence of constipation.

5) Common hair loss in chemotherapy patients, however, hair will grow again once the treatment of chemotherapy ended. Patients should be explained with proper examples to eliminate patient fear.

6) Intravenous injection of anti-cancer drugs can cause local swelling and leakage occurs, severe or even thrombophlebitis at the infusion. Right consideration should be taken to puncture the correct site, Drug leakage of infusion should be replaced and skin should be seal and cold compress.

Conclusion

Individualized treatment aimed at a more specific treatment takes into account the specific condition of the patient’s illness, the number of drugs required by patients, and the period of time intervals for targeted control. Patients are medicated according to the instructions after this analysis to develop a more appropriate drug dosage, time of administration, etc. to ensure the effectiveness of the treatment, and to reduce complications. Clinical staff handling cancer-related chemotherapy drugs should fully understand and be trained to administer the drugs. Certain patients with clinical symptoms after treatment will be observed, and the corresponding record of some patients, psychological state will be monitored with timely counseling.

Reference

1. Bai H. Manual of tumor diagnosis and treatment for primary physicians. Beijing: Peking University Medical Press; 2008. p. 356.
2. Hiddemann W, Buske C, Dreyling M, Weigert O, Lenz G, et al. Treatment strategies in follicular lymphomas: Current status and future perspectives. J Clin Oncol 2005; 23(26): 6394–6399. doi: 10.1200/JCO.2005.07.019.
3. Moore A. Breast cancer therapy-looking back to the future. N Engl J Med 2007; 357: 547–549. doi: 10.1056/NEJMe078153.

4. Grothey A, Sargent D. Overall survival of patients with advanced colorectal cancer correlates with availability of fluorouracil, irinotecan, and oxaliplatin regardless of whether doublet or single-agent therapy is used first line. J Clin Oncol 2005; 23(36): 9441–9442. doi: 10.1200/JCO.2005.04.4792.
5. Waechter F, Passweg J, Tamm M, Brutsche M, Herrmann R, et al. Significant progress in palliative treatment of non-small cell lung cancer in the past decade. Chest 2005; 127(3): 738–747. doi: 10.1378/chest.127.3.738.
6. Saltz LB. Managing chemotherapy-induced diarrhea. Clin Adv Hematol Oncol 2006; 4(3): 203–204.
7. Mu Guimei. Effect of nursing intervention on quality of life in oncology patients [J]. Nursing practice and research, 2012, 09 (2): 34–35.
8. Rojas C, Stathis M, Thomas AG, Massuda E, Alt J, et al. Palonosetron exhibits unique molecular interactions with the 5-HT3 receptor. Anesth Analg 2008; 107(2): 469–478. doi: 10.1213/ane.0b013e318172fa74.
9. Ruhlmann C, Herrstedt J. Palonosetron hydrochloride for the prevention of chemotherapy-induced nausea and vomiting. Expert Rev Anticancer Ther 2010; 10(2): 137–148. doi: 10.1586/era.09.175.
10. Mao Jianjun, Xu Yonghua. Comprehensive nursing of chemotherapy for 180 cases of malignant tumour [J]. Qilu Nursing complex, 2009, 15(13): 71–72 .