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RESEARCH ARTICLE

ASSOCIATION OF ABO BLOOD TYPE WITH CHEMOTHERAPY SENSITIVITY IN ENDOMETRIAL CANCER

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ABSTRACT

Objective: To explore the relationship of ABO blood group with the clinical efficacy of chemotherapy in endometrial carcinoma.
Methods: The clinical data of 320 patients with endometrial carcinoma admitted in our hospital from February 2010 to July 2014 were retrospectively analyzed. Eighty-two cases of type A blood, 86 cases of type B blood, 94 cases of O type blood and 58 cases of AB type blood were included. The blood type of patients and the follow-up results of chemotherapy were analyzed. And the relationship between ABO blood group and the sensitivity of chemotherapy in endometrial carcinoma was analyzed.
Results: The chi-square analysis showed that there was no significant difference between the chemotherapy effect and the sensitivity of chemotherapy in group A, B and AB (P >0.05). However, the chemotherapy sensitivity of endometrial cancer patients with O blood was higher than those of the other three groups (P<0.05). Furthermore, Multivariate logistic regression analysis showed that O-type blood was helpful in improving patient chemotherapy sensitivity (OR = 3.057).
Conclusions: Type O blood is helpful to improve the sensitivity of chemotherapy in patients with endometrial carcinoma.

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INTRODUCTION

Endometrial carcinoma refers to the malignant tumor that occurs in endometrial epithelial cells. In China, there is an upward trend in the incidence of endometrial cancer. Andit has caused the most amount of deaths in gynecologic malignant tumor (Chen, 2015). At present, the clinical treatment of endometrial cancer mainly involves surgery and chemotherapy. However, most patients were in advanced stage accounting for difficult diagnosis. Therefore, the main research direction is to improve the efficiency of chemotherapy by treating the patients with chemotherapy as long as possible to prolong the survival period of patients. In recent years, some recent studies have shown that there is a certain correlation between blood type and endometrial cancer (Yuzhalin *et al*., 201; Gates *et al*., 2011; Xu *et al*., 2011), but there is still no research on chemotherapy sensitivity. In this study, we selected 320 cases of endometrial cancer patients treated in our hospital, and analyzed whether there was a difference between the chemotherapy sensitivity in patients with endometrial cancer and different blood types.

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To provide reference for the clinical treatment of endometrial cancer and prolong the survival of patients. The research will be reported as follows.

MATERIALS AND METHODS

Patients

From February 2010 to July 2014, A total of 320 patients with endometrial cancer patients admitted to our hospital were selected, including 82 cases of type A blood, 86 cases of type B blood, 94 cases of type O blood and 58 cases of type AB blood. The general data of the four groups were not statistically significant (P<0. 0.05). Inclusion criteria: (1) informed consents of the study were obtained; (2) complete clinical data was screened; (3) the diagnosis of endometrial carcinoma was confirmed by pathological examination, and the stage of cancer was IIIA~IVA. (4) for primary endometrial carcinoma, no other cancers were combined. (5) the blood type of the patients is A, B, O and AB; (6) Treatment with TC chemotherapy.

Treatments prescription

The patients were treated with chemotherapy regimen including paclitaxel and platinum (TC) with 6 cycles (21d per

cycle) of chemotherapy. The specific regimen of chemotherapy was intravenous infused with paclitaxel injection of 135-175mg /m^2 in the first day. Then intravenous infusing of carboplatin 300 mg/m^2 in the second day. To protect liver and gastric mucosa, patients would stop vomiting and giving related symptomatic treatment during chemotherapy.

Data screening and evaluation criteria of indexes

The clinical data of 320 patients with endometrial cancer treated by our hospital were retrospectively analyzed. And the patients' blood type, chemotherapy efficacy were screened. The sensitivity of endometrial cancer in patients with type A, B, O and AB were analyzed. Response Evaluation Criteria in Solid Tumors, RECIST (Yuzhalin *et al*., 2012) was used to evaluate the efficacy of chemotherapy. Completely remission (CR) is for the lesion disappeared within four weeks and no new lesions appeared. Partial remission (PR) is that the total reduction of the maximal diameter of the lesion within four weeks exceeded 30%. Stable disease (SD) is that the total reduction of the maximal diameter of the lesion within four weeks was between 20% and 30%.Progressive disease (PD) is that the maximum diameter of the lesion was greater than 20% or new lesions appeared.

Statistical analysis

SPSS17.0 software was used for statistical analysis of the data. And the data utilization rate (%) was analyzed using χ^2 test. Logistic regression analysis was used to analyze the influence factors and considered OR>1 as a risk factor. P<0.05 was considered statistically significant.

RESULTS

Association of ABO blood group and tumor chemotherapy effect

According to the chi-square analysis, there was no statistically significant difference between the chemotherapy efficacy and chemotherapeutic sensitivity of group A, B, and AB blood group (χ2=2.815, 7.955, 1.325, P<0.05).

DISCUSSION

From 2004 to 2008, China's tumor registration data showed that the incidence of uterine tumor increased to 1.5 times, which is the number one in female malignant tumor (6). At present, the pathogenesis of endometrial carcinoma is not clear that is generally believed to be related to heredity, life habit and fertility. In terms of chemotherapy efficacy and sensitivity of chemotherapy, this study showed that A, B and AB had no significant effect on chemotherapy efficacy and chemotherapy sensitivity in patients with endometrial cancer. Type O blood helps to improve the efficacy and sensitivity of chemotherapy in patients with endometrial cancer. In response to this result, we believed that it was related to blood group antigen. Blood type antigens are different from the A and B antigens on the surface of human red blood cells, and the blood types are divided into A, B, AB and O. The type A and B red blood cells have A antigen and B antigen respectively. There are both A and B antigens on the AB cell. Type O red blood cells do not contain A and B antigens, but the precursor substance H antigen containing A and B antigen.

In this study, we thought that the antigens were related to the killing effect of different antigens on tumor cells. Studies have shown that A and B antigens are more similar to the surface antigens of tumor cells, and immune cells play A lower role in the identification and killing of tumor cells. On the other hand, cancer cell surface A and B-type antigen can promote cell movement and inhibit apoptosis of cancer cells (Li *et al*., 2015).Cui HT (2016) found that type B people had high risk for ovarian malignancy. In contrast, type O blood has low risk of ovarian malignant tumors, and type O blood in patients with ovarian malignant tumor patients using chemotherapy is better than other kinds of blood .In view of the current study on the effect of blood type on the effect of chemotherapy on endometrial cancer, Cui HT's study also verified the results of this study. In conclusion, A and AB blood type have no significant effect on chemotherapy sensitivity and prognosis of endometrial cancer patients, and B blood group is A negative factor for prognosis of endometrial cancer patients.

Table 2. Comparison of tumor chemotherapy in ABO blood group patients

Chemotherapy effect	Atype blood（n=82）		B type blood（n=86）		O type blood（n=94）		AB type blood（n=58）	
	Cases	Proportion	Cases	Proportion	Cases	Proportion	Cases	Proportion
CR	12	14.63	10	11.63	26	71.56	11	18.97
PR	18	21.95	12	13.95	32	69.04	15	25.86
SD	28	34.15	26	30.23	19	165.24	19	32.76
PD	24	29.27	38	44.19	17	164.16	13	22.41
Response Rate	36.59		25.58		61.7		44.83	

Table 3. Comparison of chemotherapy sensitivity among ABO blood group patients

Blood type	B	SE	Wals	P	OR(95%CI)
Ablood type/non-A blood type	0.331	0.264	1.572	0.210	0.718(0.428,1.205)
B blood type/non-B blood type	-1.017	0.280	13.217	0.000	0.362(0.209,0.626)
O blood type/non-o blood type	1.117	0.254	19.330	0.000	3.057(1.858,5.031)
AB blood type/non-AB blood type	0.116	0.292	0.157	0.692	1.123(0.633,1.991)

The effect of chemotherapy in type O patients was better than that of the other three groups (χ2=12.635, 26.948, 5.837, P<0.05). Further multifactor logistic regression analysis showed that type O blood can improve the sensitivity of chemotherapy in patients. See Table 2, Table 3.

Type O blood helps improve chemotherapy sensitivity in patients with endometrial cancer. This research advised to continue in-depth study on one hand, further clear influence on endometrial cancer, blood type will be proved. On the other hand, we suggested that clinicians put forward a more personalized according to the treatment of patients with blood

group to explore the high grade endometrial carcinoma treatment.

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