



## Effect of Shenmai Medicine on Immune Function of Patients with Ovarian Cancer and Cervical Cancer

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### **Abstract**

**Objective:** To investigate the effect of Shenmai medicine on the immune function of patients with ovarian cancer and cervical cancer.

**Methods:** 50 patients with ovarian cancer or cervical cancer who undergo combination therapy with Shenmai medicine in our hospital from July 2019 to July 2021 are selected as the research subjects. The time for combination therapy is at least 7 weeks after their last treatment like surgery, radiotherapy or chemotherapy. Patients' changes of related cytokines and the level of T lymphocyte subsets are being kept close follow-up after treatment.

**Results:** *The changes of related cytokines in the CD4+ T cells of the patients after treatment are higher than those before each stage of treatment, and there is a significant difference in reexamination after 7 cycles ( $P<0.05$ ). There is a significant difference in the level of T lymphocyte subsets in patients after 7 cycles of treatment ( $P<0.05$ ).*

**Conclusion :** *combination therapy with Shenmai medicine can effectively improve the immunocompetence of T lymphocytes in patients with ovarian cancer and cervical cancer, and enhance their body's anti-tumor function, which is believed worthy of promotion.*

**Keywords :** *Shenmai injection, ovarian cancer, patients with cervical cancer, immune function*

## Introduction

Ovarian cancer and cervical cancer are malignant tumors of the female reproductive system. Nowadays, with the change of people's living habits and dietary structure, the incidence of ovarian cancer and cervical cancer gradually shows a linear upward trend, which seriously affects the patients' life quality and their physical and mental health [1-2]. Surgical treatment is often used for the treatment of ovarian cancer and cervical cancer, but due to the curative effect of chemotherapy after surgical treatment is not satisfying, the cancerous cells are prone to recurrence and metastasis. Combination therapy with Shenmai medicine is an effective method for the treatment of malignant tumors at the present stage, which can effectively inhibit the growth and replication of cancerous cells and protect patients' physical as well as mental health. In this research, 50 cervical cancer patients undergoing combination therapy with Shenmai medicine in our hospital from September 2019 to September 2021 are selected as the research objects to explore the effect of Shenmai medicine on the immune function of patients with ovarian cancer and cervical cancer.

**The research report is as follows:**

### 1. Materials and Methods

#### 1.1 Clinical data

50 patients with cervical cancer who undergo combination therapy with Shenmai medicine in our hospital from September 2019 to September 2021 are the subjects of research. The time for combination therapy is at least 7 weeks after their last treatment like surgery, radiotherapy or chemotherapy. As recorded, those patients didn't receive any cellular immunotherapy before. Patients' KPS score is  $\geq 60$  points, and the expected survival time is  $>3$  months.

### 1.2 Method

(1) Each patient selected took 10ml of peripheral venous blood. Adopting lymphocyte stratified liquid density gradient centrifugation and adjusting the cell concentration to  $5 \times 10^6$  cells/ $m^2$  by use of serum-free culture fluid, then the blood sample processed was incubated for 2 hours in an environment with a carbon dioxide concentration of 5% at 37 degrees Celsius. A blood cell separator [COM.TEC, Shanghai Huanxi Medical Instrument Co., Ltd.], a flow cytometry [FACSCalibur, USA] and a kit (also produced by the same manufacturer above) were used for blood testing. Cervical cancer cells: inoculated in the culture medium with 10% of fetal bovine serum, placed in a constant temperature incubator at 37 degrees Celsius with a carbon dioxide concentration of 5%, and subcultured once every 2-3 days. Ovarian cancer cells: The same method of inoculation with that of cervical cancer cells above. (2) The patient was given Shenmai injection (Sichuan Shenghe Pharmaceutical Co., Ltd.-50ml) 100ml d1-d5, and random observation within 48 hours to see whether there is any adverse effect.

### 1.3 Statistical analysis

The SPSS18.0 software was applied for data process. The  $\chi^2$  test was performed using n (%) for count data, and the measurement data was given t test using ( ) for presentation. The difference of  $P < 0.05$  has statistical significance.

## Results

### 2.1 Comparison of baseline data

Table 1 Comparison of baseline data

Case Number	Age (Years)	Weight upon Admission (kg)	Average Weight (kg)	KPS (Points)	Expected Survival Time (Months)
50	44.29±13.45	45.92~ 60.93kg	50.39±6.38	≥60	>3 Months

**2.2 Changes of cytokines after treatment**

The changes of related cytokines in patients after treatment are higher than those before each stage of treatment, and there is a significant difference in reexamination after 7 cycles ( $P < 0.05$ ), as shown in Table 2.

Table 2 Changes of cytokines in patients after treatment ( $\bar{x} \pm s$ , ng/L)

Group	IL-2	TNF- $\alpha$	IFN- $\gamma$
Pre-treatment	152.25 $\pm$ 98.26	282.59 $\pm$ 68.23	22.48 $\pm$ 18.47
Post-4 Cycles of treatment	203.47 $\pm$ 54.37 <sup>a</sup>	336.28 $\pm$ 62.37 <sup>a</sup>	61.27 $\pm$ 53.48 <sup>a</sup>
Post-7 Cycles of treatment	224.58 $\pm$ 46.42 <sup>ab</sup>	358.84 $\pm$ 60.46 <sup>ab</sup>	71.83 $\pm$ 48.23 <sup>ab</sup>

Compared with the data before treatment,  $aP < 0.05$ ; compared with the data after 4 cycles of treatment,  $bP < 0.05$ .

**2.3 Comparison of T lymphocyte subgroup levels after treatment**

As indicated in the re-examinations, there was a significant difference in the level of T lymphocyte subsets in patients after 7 cycles of treatment ( $P < 0.05$ ). See Table 3.

Table 3 Comparison of T lymphocyte subgroup levels after treatment ( $\bar{x} \pm s$ )

Case Number	CD3 <sup>+</sup> (%)		CD4 <sup>+</sup> (%)		CD8 <sup>+</sup> (%)		CD4 <sup>+</sup> /CD8	
	Post-4 Cycles of Treatment	Post-7 Cycles of Treatment	Post-4 Cycles of Treatment	Post-7 Cycles of Treatment	Post-4 Cycles of Treatment	Post-7 Cycles of Treatment	Post-4 Cycles of Treatment	Post-7 Cycles of Treatment
50	58.27 $\pm$ 3.19	52.37 $\pm$ 2.88	36.17 $\pm$ 2.06	31.38 $\pm$ 2.16	32.17 $\pm$ 1.88	26.38 $\pm$ 2.37	1.47 $\pm$ 2.38	1.26 $\pm$ 2.04
<i>t</i>	5.398	4.281	3.297	5.276	6.794	4.286	5.263	4.775
<i>p</i>	0.002	0.001	0.000	0.001	0.002	0.002	0.001	0.000

## Discussion

Cancer has biological characteristics like abnormal cell differentiation and proliferation, loss of growth control, invasiveness and metastasis. Cancer occurrence is a complex multi-factor, multi-step process, divided into three processes: carcinogenesis, cancer promotion, and evolution. Nowadays, with the intensification of life pressure and changes in the environment, the number of female patients suffering from cervical cancer and ovarian cancer is showing a linear upward trend every year, which seriously affects the patients' physical and mental health as well as their quality of life. Cervix is divided into the vaginal part of cervix and supravaginal part of cervix. The majority of cervical cancer shows squamous cell carcinoma, while the cervical cancer occurring in the supravaginal part of cervix is mainly adenocarcinoma in general [3 -4]. Ovarian cancer, a kind of cancer that occurs in ovary, is the third most malignant tumor that harms women's health. Combination therapy with Shenmai medicine is believed as the fourth cancer treatment available after surgery, chemotherapy, and drug therapy. After this type of surgical treatment, the patients are seen lower incidence of postoperative toxic reactions, side effects, and obviously improved quality of life.

This research shows that the changes of patients' related cytokines in the CD4+ T cells after treatment are higher than those before each stage of treatment, and there is a significant difference in the reexamination after 7 cycles ( $P < 0.05$ ). Through this research, it can be seen that CIK is an important method for the treatment of malignant tumors, which can effectively resist the reproduction and replication of cancerous cells with lower toxic and side effects and satisfy all the requirements for effector cells in adoptive immunotherapy. It has become a new type of treatment for malignant tumor, which can enhance the patient's immune function, promote the rapid growth of normal cells, thoroughly remove residual cancer cells, and accelerate the patient's recovery. In addition, the combination therapy with Shenmai medicine can largely relieve patients' pain, prolong overall survival time, inhibit cancer cell metastasis, improves the clinical manifestation of adverse complications, and shows intensified killing power on cancer cells, thereby inhibiting the growth and development of cancerous cells, and promoting the patient's body rehabilitation.

To sum up, the combination therapy with Shenmai medicine can effectively improve the immunocompetence of T lymphocytes in patients with ovarian cancer and cervical cancer, and enhance their body's anti-tumor function, which is do worthy of promotion.

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