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LETTER TO THE EDITOR

Combined Therapy of IL-2 and IFN-A on Immune Function of Postoperative Patients with Liver Cancer in Ecological Environment

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The effect of combined therapy of IL-2 and IFN-α on immune function of postoperative patients with liver cancer was observed and analyzed in ecological environment. The 160 patients with liver cancer who received treatment in our hospital were selected as research objects, all of whom were applied with treatment for liver cancer. All the patients in this study enjoyed the right to know and signed informed consent before study. The patients were divided into research group and control group, each containing 80. The patients in control group were treated with IFN-α after operation, while patients in research group were applied with combined therapy of IL -2 and IFN. Before the treatment, there was no significant difference in SIL-12 level between research group and control group, $P > 0.05$; After implementing different treatments, theSIL-12 level in research group increased significantly, which was significantly higher than that of control group, $P < 0.05$. In addition, the levels of CD3+, CD4+, CD8+, CD56+in research group after treatment were also significantly superior to control group, and the intergroup difference was of statistical significance, $P < 0.05$. The combined therapy of IL-2 and IFN-αwould effectively improve the immune function of postoperative patient with liver cancer and obtain better prognosis, which should be promoted clinics.

I Introduction

ChichJen Shieh, GuangSheng Wan, Wei Wang, Yuzhou Luo, published articles “Evaluation Model for the Application of Artificial Intelligence Medical Assistant System to the Development of Medical Ecology in China” published in Issue: 107, Pages: 183-189, Article No: e107074, year: 2019, the main content is people are increasing the requirements for medical ecology in past years so that the establishment of an electronic medical care mechanism becomes urgent. Along with the development of network technology and the advance of information technology, electronic data could be done the statistical analysis. By extracting electronic medical records through the Internet, physicians could rapidly grasp complete medical record information for the diagnosis to further enhance medical quality and assist hospital managers in making proper decisions. This paper discusses is the effect of combined therapy of IL-2 and IFN-α on immune function of postoperative patients with liver cancer was observed and analyzed in ecological environment.

Liver cancer is malignant tumor in liver. There are two kinds of liver cancer: primary liver cancer and metastatic liver cancer. Generally speaking, liver cancer usually refers to primary liver cancer. Primary liver cancer

is carcinomas occurring in hepatocytes or intrahepatic cholangiocytes. According to the related data, it is found that liver cancer has higher morbidity in common malignant tumors of China, ranking the forth of common malignant tumor and the third fatal cause. This disease endangers people's life (Pan et al. 2014). Hepatocellular carcinoma intrahepatic bile duct and HCC-ICC are three major pathological types in primary liver cancer, which have a great difference in pathogenesis, biological behavior, histological patterns, treatment and prognosis (Gu et al. 2018). Among them, hepatocellular carcinoma accounts for a larger proportion, usually exceeding 90%.

In recent years, the morbidity of liver cancer has increased worldwide, ranking the fifth in malignant tumors. The etiology of primary liver cancer remains unclear. It is commonly believed that it is the result of synergistic effect of multiple factors (Li et al. 2019). According to epidemiological investigation, it is believed that liver cancer is closely related to viral hepatitis, cirrhosis, aflatoxin contamination, family history and genetic factors and so on (Refaat et al. 2017). Surgical treatment is the best way for liver cancer. This paper observes and analyzes the effect of combined therapy of IL -2 and IFN-α on immune function of postoperative patients with liver cancer.

Figure 1. Aflatoxin.

II Perspective

160 patients who had been diagnosed as liver cancer in our hospital during the period from January 2015 to December 2018 were selected as research objects. The inclusion criteria were: there are intrahepatic nodules whose diameter is less than 2 cm according to ultrasound and AF. Of four examinations such dynamic enhancement MRI, dynamic enhancement CT, ultrasound contrast and Gd-EOB-DTPA dynamic enhancement MRI, at least two examinations showed typical characteristic of liver cancer: obvious reinforcement of focus and portal venin atarterial phase or "fast forward fast out" of decrease at delay period (Xiao 2016), the patients enjoyed the right to know and signed a formal informed consent before study; the selected patients showed no complications, mental disorders or lower ability of communication.

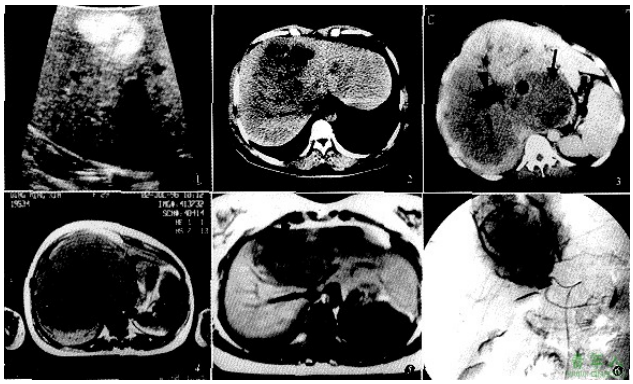

Figure 2. Imaging of liver cancer.

The patients were randomly divided into research group and control group, each containing 80 cases. Among them, there were 45 males and 35 females in research group, with age ranging from 38 to 70 years old, and the average age was (55.7+3.2) years old. All cases were single mass, with diameter of 3-10cm, and the average diameter was (7.3+0.5) cm. there were 48 males and 32 females in control group, with age ranging from 40 to 68 years old, and the average age was (56.8+3.6) years old. All cases were single mass, with diameter of 3-10 cm, and the average diameter was (7.6+1.2) cm. There was no significant difference in data between two groups before treatment $P > 0.05$.

Ⅲ Personal View

Patients in the control group was only treated with INT-α while the patients in research group was applied with combined therapy of IL-2 and INT-α. For the research group, treatment was started 2 weeks after the operation and intravenous infusion of IL-2was given to the patients, with drug specifications of 1 million U; the intramuscular injection of INT-α was given, with drug specification of 1 million U. The treatment was given once a day, with 10 days as a course, and 3 continuous courses were carried out. For the control group, the application of INT-α was same as that in research group (i.e., the treatment was carried out once a day, with 10 days as a course, and 3 continuous courses were implemented).2.3 Observation Index.

The content of IL -12 for peripheral blood in research group and control group was examined by double-antibody sandwich ELISA. The levels of CD3+, CD4+, CD8+ and CD56+ were observed and recorded. The cellular level of CD4/CD8 and NK was recorded and compared. The software SPSS21.0 was used for statistical analysis. The measurement data were expressed in $\bar{x} \pm s$, and t test was carried out for comparison of inter-group difference. The enumeration data were expressed in (n+%) and X2 was used for group comparison. When $P < 0.05$, the intergroup difference was of statistical value.

IV Conclusion

Comparison of SIL-12 level between two groups before and after treatment

Table 1 shows the comparison of SIL-12 level between two groups before and after treatment. Before treatment, the SIL-12 level in research group was (203.6+14.2) pg/ml, while that in control group was (201.8+13.9) pg/ml, and there was no significant difference between two groups, $P > 0.05$. After treatment, the SIL-12 level in research group was (249.3+11.8) pg/ml and that in control group was (204.9+10.5) pg/ml. It can be seen that the improvement degree in research group was more significant than control group, and the intergroup difference was of statistical significance, $P < 0.05$.

Comparison of changes in lymphocyte phenotypes before and after treatment.

Before and after treatment, the levels of CD3+, CD4+, CD8+ and CD56+ in control group were not significantly changed, without statistical significance ($P > 0.05$); the levels of CD3+, CD4+, CD8+ and CD56+in research group after treatment were significantly higher than that before treatment, with statistically significance, $P < 0.05$.

Comparison of CD4/CD8 level and NK cell level between two groups before and after treatment.

Table 3 shows the comparison of CD4/CD8 level and NK cell level between two groups before and after treatment. Before the treatment, there was no significant difference between the two groups, $P > 0.05$. After the implementation of different treatments, the improvement condition of patients in research group was significant superior to that of control group, and the intergroup difference was of statistical significance, $P < 0.05$.

Table 1. Comparison of SIL-12 level in two groups before and after treatment ($\bar{x}$ ±s)

Groups	Cases	Before treatment (pg/ml)	After treatment (pg/ml)
Research Group	80	203.6±14.2	249.3±11.8
Control Group	80	201.8±13.9	204.9±10.5
t		0.29	9.41
P		> 0.05	< 0.05

Table 2. Comparison of changes in lymphocyte phenotypes before and after treatment ($\bar{x}$ ±s)

Index	Time	Research Group (n=80)	Control Group (n=80)
CD3+ (%)	Before Treatment	20.45±1.50	20.11±1.49
	After Treatment	29.70±2.10	20.14±1.37
CD4+ (%)	Before Treatment	12.04±1.11	11.95±1.07
	After Treatment	19.96±2.11	11.98±1.03
CD8+ (%)	Before Treatment	8.55±1.73	8.63±1.22
	After Treatment	17.80±1.83	8.53±1.21
CD56+ (%)	Before Treatment	12.79±1.60	12.63±1.94
	After Treatment	18.05±1.62	12.80±1.75

Table 3. Comparison of CD4/CD8 level and NK cell level between two groups before and after treatment ($\bar{x}$ ±s)

Groups	Cases	CD4/CD8		NKCell (%)	
		Before Treatment	After Treatment	Before Treatment	After Treatment
Research Group	80	1.18±0.57	1.88±0.30	17.37±4.26	31.09±6.38
Control Group	80	1.07±0.65	1.19±0.89	17.93±4.15	10.69±3.26
t		0.39	8.09	0.28	10.25
P		> 0.05	< 0.05	> 0.05	< 0.05

Just like other malignancies, patients with primary liver cancer will show significant decrease in immune function. Through a large number of clinical studies and practical experience, it has been known that interleukin-12 (IL-12) and interferon alpha (IFN-α) can enhance cellular immune functions and effectively treat tumors, which has been approved by many practical. However, there are not enough research materials to fully demonstrate its effect on enhancing the immune function. Change in cell phenotype can respond to changes in T cell subsets. During the treatment, change in IL-12 is also an important indicator of immune function.

Interleukin-12, also known as cytotoxic lymphocyte maturation factor and natural killer cell (NK) stimulator, is a cytokine of isodimers produced by cells such as mononuclear macrophages and b-lymphocytes. Endogenous IL-12 may partially mediate interleukin-2 (IL-2). IL-12 antibody can inhibit IFN -γ produced by PBLs in the body. Therefore, one of the important measures to improve the immunity of il-2 is IL-12 mediation.

To sum up, the implementation of combined therapy of IL-2 and IFN-α can increase the secretion ofendogenous IL-12 and has a positive effect on anti-tumor immunity. Therefore, this combined therapy is worth of being promoted in clinics.

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