

Infection IL8 and IL10 and serum calcitonin original value (PCT) in clinical examination.

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Abstract

Objective: To explore the patients with liver cirrhosis complicated by abdominal cavity infection IL8 and IL10 and serum calcitonin original value (PCT) in clinical examination.

Methods: From July 2016 to February 2017, collected from digestive internal medicine diagnosis of liver cirrhosis associated with Spontaneous Bacterial Peritonitis (SBP) 50 cases; Simple ascites liver cirrhosis 50 cases; 50 cases of healthy subjects, respectively for SBP group, the SBP group and healthy group. In three groups of patients with peripheral blood were separately measured related indicators, IL8 were compared, IL10, PCT levels in three groups of patients serum and IL8 IL10 in SBP group and non SBP levels in patients with ascites, the comparison.

Results: The determination of three groups of patients in the serum IL8 and IL10, PCT levels found that non SBP and SBP group in the serum IL8 and IL10, PCT levels were significantly higher than that of healthy group, $P < 0.05$, the difference was statistically significant; SBP group in the serum IL8 IL10, PCT levels were significantly higher than that of non SBP group, $P < 0.05$, the difference was statistically significant; The determination of the SBP and SBP group IL8 in patients with ascites, IL10 levels found; SBP group of IL8 in ascites, IL10 levels were significantly higher than that of non SBP group, $P < 0.05$, the difference was statistically significant.

Conclusion: IL8, IL10 and serum calcitonin (PCT) in the diagnosis of hepatocirrhosis with ascites not only has important meaning, and to estimate the severity of the patients, is worth popularizing in clinical use and further study.

Keywords: Hepatocirrhosis with abdominal cavity infection, IL8, IL10, PCT, Clinical examination.

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Introduction

In China, many persons suffer from hepatitis B. We often call the hepatitis B, cirrhosis and liver cancer the trilogy of liver cancer. Till now, how does hepatitis B develop into cirrhosis has not been clear, but the number of patients with hepatitis B developed into cirrhosis is increasing year on year [1]. In recent years, the research on cell factors has become one of the hot topics for medical workers and scientists, more new evidences indicate that the cell factor plays a significant role in hepatitis conversion, cirrhosis infection formation. Such cell factors often as inflammatory factors participate in the process of Hepatitis B develop into cirrhosis and cirrhosis infection through multiple interactions [2,3]. On the other hand, with the deepened research, the concept of cell factor is also introduced into the clinic. By studying the cell factors in peripheral bloods of patients, the inflammation development can be understood to estimate the patient situations, which can greatly help disease diagnosis and assessment of patient situations. Based on this, the clinical research is specially developed to make

relevant research and inspection on cirrhosis patients, to get some conclusions, hereby, it is reported as follows.

Methods and Materials

Subjects

50 patients with liver cirrhosis accompanied by spontaneous bacterial peritonitis and 50 patients with liver cirrhosis simple peritonitis who were hospitalized in our department of gastroenterology from July 2016 to February 2017 were selected. The diagnosis standards were based on those in scheme prepared on the Chinese National Tenth Symposium of Viral Hepatitis and Liver Diseases that was held in September 2000. The diagnosis was performed on the basis of disease history, clinical manifestation, signs, auxiliary examinations and ascites culture. 39 males and 11 females were in SBP group, with average age of (52.46 ± 2.03) ; 36 males and 14 females were in non-SBP group, with average age of 51.32 ± 1.25 ; additionally, 50 healthy volunteers were included into the healthy group, 38 males and 12 females, with average age of

52.67 ± 1.56. The differences of ages and sexes weren't of statistical significance ($P < 0.05$). Before detecting the ascites, no patients accepted anti-bacterial drugs and glucocorticoid. The general clinical data for two groups were as shown in Table 1.

Table 1. Comparisons among three groups of patients ($\bar{x} \pm s$).

	SBP group	Non-SBP group	Healthy group
Temperature (°C)	36.70 ± 0.58	36.56 ± 0.72	36.66 ± 0.91
Leukocyte in serum ($\times 10^9/L$)	5.36 ± 1.82	3.88 ± 1.24	3.76 ± 1.92
Blood platelet in serum ($\times 10^9/L$)	52.52 ± 45.58*	51.92 ± 36.48*	152.92 ± 19.62
Neutrophil ratio (%)	75.68 ± 5.18#	53.72 ± 8.6	55.26 ± 6.18
Prothrombin Time (PT) (s)	15.15 ± 1.52	15.31 ± 2.09	15.95 ± 1.06
Glutamic-pyruvic transaminase (U/L)	101.53 ± 3.55*	105.49 ± 2.75*	15.86 ± 2.28
Total bilirubin ($\mu\text{mol/L}$)	90.51 ± 1.79#	44.29 ± 1.92*	10.23 ± 1.94

Note: *refers to compared to the healthy group, $P < 0.05$; #compared to the non-SBP group, $P < 0.05$.

Diagnosis standards and ascites culture

The diagnosis standards for cirrhosis were in conformity with the SBP diagnosis standards in diagnosis standards of scheme prepared on the Chinese National Tenth Symposium of Viral Hepatitis and Liver Diseases that was held in September 2000: different degrees of fever, abdominal pain, abdominal tenderness and other typical clinical manifestations [4,5]; increased abdominal tension under body examination, with different degrees of tenderness, rebound tenderness; ascites increase, diuretic has poor diuretic efficacy; Routine examination of ascites: leukocyte $> 200 \times 10^6/L$ or polymorphonuclear leukocytes $> 250 \times 10^6/L$, blood routines: WBC amount or classification rise; ascites bacteria culture positive; secondary bacterial peritonitis excluded; with any two ones of foregoing standards, and excluding the diffuse peritonitis resulted from cancer ascites; tuberculous ascites, abdominal viscera rupture or perforation.

IL8, IL10 measurement

Specimen sampling: Within 48 d since admission, abdominal puncture was performed under aseptic conditions, then ascites specimens were sampled under aseptic conditions, meanwhile, the venous blood was sampled under empty stomach and serum was separated as soon as possible. Indicators like IL8 and IL10 were sent, double monoclonal antibody sandwiched Enzyme Linked Immunosorbent Assay (ELISA) was used for detection.

Plasma PCT measurement

3 ml of fasting venous blood at early morning was sampled, after centrifuged, the serum was separated for storage and later detection. Dry immunofluorescence quantitative assay was adopted, the serum PCT of each specimen was detected according to instructions on serum PCT detection kit (Nanjing Getein Biotech, Inc.), Getein1100 immunofluorescence quantitative analyzer was used for measurement. Results: PCT concentration < 0.5 ng/ml indicated negative, > 0.5 ng/ml indicated positive, normal plasma PCT concentration < 0.5 ng/ml, 0.5-2 ng/ml indicated infection possibly existed, > 2 ng/ml indicated there existed serious bacterial infection, when patients in SBP group improved, plasma PCT was examined again.

Statistical processing

SPSS19.0 statistical software was used for data handling, t inspection was performed on the measurement data, $P < 0.05$ showed the differences were of statistical significance.

Results

Comparison about serum IL8, IL10 and PCT for three groups of patients

Measurement of IL8, IL10 and PCT levels in the serum of three groups of patients discovered that compared to the healthy group, IL8, IL10 and PCT in the serum of non-SBP group and SBP group was apparently higher respectively; $P < 0.05$ showed the differences were of statistical significance; IL8, IL10 and PCT in the serum of SBP group was apparently higher than the non-SBP group respectively, $P < 0.05$ showed the differences were of statistical significance (Table 2).

Table 2. Comparison about serum IL8, IL10 and PCT for three groups of patients ($\bar{x} \pm s$).

Time	Number cases	PCT ($\mu\text{g/L}$)	IL-8 (pg/L)	IL-10 (pg/L)
SBP group	50	3.182 ± 3.628#	± 3.456 ± 2.729#	± 2.18 ± 0.256#
Non-SBP group	50	0.982 ± 0.469*	± 1.729 ± 1.261*	1.68 ± 0.185*
Healthy group	50	0.195 ± 0.152	0.885 ± 0.164	0.775 ± 0.042

Note: *compared to the healthy group, $P < 0.05$; #compared to the non-SBP group, $P < 0.05$.

Table 3. Comparison about ascites IL8 and IL10 for patients of three groups.

Time	Number cases	IL-8 (pg/L)	IL-10 (pg/L)
SBP group	50	146.28 ± 3.156	153.48 ± 4.482
Non-SBP group	50	78.18 ± 2.167	72.85 ± 2.729
t	-	125.782	108.65

p	-	0.000	0.000
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Comparison about ascites IL8 and IL10 for patients of non-SBP group and SBP group

By measurement, we found IL8 and IL10 in ascites of SBP group of patients was apparently higher than non-SBP group of patients respectively, $P < 0.05$ showed the differences were of statistical significance (Table 3).

Discussion

In China, many persons suffer from hepatitis B, and hepatitis B developed into cirrhosis is very common. Because the body's immune system will be affected to certain extent after onset of cirrhosis, cirrhosis accompanied by infection is very common. As per the statistics, among the cirrhosis accompanied by infection, spontaneous peritonitis is most common, it is a complication of cirrhosis patients during decompensated cirrhosis. The abdominal infection is mainly related to cirrhosis-induced increase of portal system pressure, intestinal bacteria translocation and body immune system dysfunction. Abdominal infection for most patients is related to foregoing factors, but the detailed pathogenesis hasn't been clearly known [6,7].

In recent years, two new kinds of cell factor Interleukin-8 (IL-8) and IL-10 have been widely noted by medical workers and scientists, IL-8 is a kind of cell factor with higher activity, its biological nature is small-molecule peptide, the mononuclear macrophage, lymphocyte, granulocyte and other cells can secrete such cell factor, which can be activated by a series of other cell factors then expressed heavily, to play a chemotaxis role on the immune cells in the body, as a very strong chemotactic factor, the inflammatory reaction can occur at corresponding site. Additionally, more and more profound researches have been performed on IL-10, scientists have found that IL-10 is not only a cell factor, but also an anti-inflammatory factor for the body, such interleukin can be secreted by many varieties of leucocytes, then can be bound with specific receptor on cell membrane of inflammatory cells to generate biology activity, by its distinctive inflammation inhibition effect, it can slow the acute inflammation, then turn acute inflammation to chronic inflammation. During studying the acute hepatitis B developed to chronic hepatitis B, scientists have found that IL-10 plays a significant role. In addition, such cell factor can mediate the humoral immune response and participate in immediate hypersensitivity, but its most important biology role is to inhibit the immune system. It is a significantly important anti-inflammation factor [8,9].

In addition, when studying the interleukin, the other detection index closely related to cirrhosis together with ascites PCT (also one of studying objects in this experiment) is the propeptide of calcitonin, under normal circumstances, PCT can't be found in the human serum. But when related changes occur in the body like cirrhosis, the inflammatory cells in the liver can be activated to generate PCT, at such time, PCT in patient's serum will continuously rise. Relevant researches

show that when inflammation occurs in the body, PCT dosage will change correspondingly with change of severity degree, which is of great significance in judging the severity degree of inflammation. In addition, when a patient suffers from cirrhosis, his/her intestinal flora is imbalanced and can release a large amount of endotoxin under serious conditions, which is the main reason to generate PCT. Finally, the high pressure of portal system caused by cirrhosis can increase the endotoxin content in the blood, further to speed up rise of PCT content [10-12].

Conclusion

Relevant results have been obtained after experimental results were analysed, firstly, measurement on IL8, IL10 and PCT in the serum of three groups of patients showed that, compared to the healthy group, the average IL8, IL10 and PCT in the serum of non-SBP group and SBP group was significantly higher respectively, indicating whether the cirrhosis ascites is infected or not, the foregoing three indicators all increase. This is because the body endotoxin content apparently rises after the cirrhosis attacks, to apparently increase PCT, which is not concerned to the infection of ascites, showing that, whether cirrhosis is accompanied by infected ascites or not, the intestinal endotoxin will accumulate apparently, to apparently increase PCT content in patient's peripheral blood. Additionally, from increase of IL8 and IL10, we can see when the patient is attacked by cirrhosis, the body's immune mechanism will correspondingly react, so, the apparent role of these two substances on immunosuppression is of great guiding significance to clinical inspection. Compared to the non-SBP group, the average IL8, IL10 and PCT in serum of group SBP was apparently higher respectively, this indicates after the ascites was infected, PCT level would continuously rise, the intestinal endotoxin would continue to accumulate. It could be got that IL8, IL10 and PCT could judge cirrhosis and severity degree of diseases as per relevant levels. Finally, by measuring IL8 and IL10 levels in ascites for non-SBP group and SBP group, it discovered the average IL8 and IL10 for SBP group was apparently higher than the non-SBP group respectively. This showed that measurement of IL8 and IL10 can assess the disease situations by sampling peripheral blood, and it plays a significantly role in detecting indexes in ascites.

IL8, IL10 and PCT are of important significance in diagnosis of cirrhosis accompanied by ascites, which can be used to assess the severity degree of patient's disease, so, they are worthy of clinical application and further studies.

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