



The Pattern of Cytokine Synthesis in the Ascitic Fluid (AF) Of Cirrhotic Patients

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Abstract

To determine the pattern of cytokine synthesis in the ascitic fluid (AF) of cirrhotic patients, with or without spontaneous bacterial peritonitis (SBP).

Keywords: Liver cirrhosis; cytokines; spontaneous bacterial infection; paracentesis

Introduction

There is increasingly evidence that several cytokines mediate hepatic inflammation, apoptosis and necrosis of liver cells, cholestasis and fibrosis. Interestingly, the same mediators also mediate the regeneration of liver tissue after injury [1]. Many immune system abnormalities have been associated with cirrhosis [2]. Most acute and chronic liver diseases are characterized by inflammation processes with enhanced expression of various pro- and anti-inflammatory cytokines in the liver [3]. Cytokines, in general, play an important role in host defense mechanism, and it is only under certain conditions that they may mediate deleterious results and contribute to the manifestations of tissue injury [4].

Spontaneous bacterial peritonitis (SBP) is an infectious disease specific to liver cirrhosis patients. Because inflammatory and immune reactions are altered by hepatic cirrhosis, the efficacy of innate reactions is limited [5]. SBP is associated with an important production of inflammatory mediators [6]. In these patients cytokines are released to blood and ascites, in response to hepatic injury [5].

Methods and Materials

We prospectively studied 13 cirrhotic patients, who were admitted to the Department of Internal Medicine of University Hospital of Patras during the period from May 2008 until December 2009, through a variety of reasons. From the amount of patients, seven patients developed SBP (group 1) and six patients presented no evidence of infection, including SBP (group 2).

Cirrhosis was diagnosed on the basis of typical clinical (splenomegaly, hepatomegaly, ascites), laboratory (enhanced liver enzymes, prolonged prothrombine time), ultrasonographic findings and/or liver biopsy. The diagnosis of SBP was established by the presence of a polymorphonuclear cell count in ascitic fluid greater than 250 cells/mm, in the absence of clinical, radiological or laboratory data suggesting secondary peritonitis, hemorrhagic ascites, pancreatitis, mycobacterial or fungal peritonitis or carcinomatosis. We also observed indicators of inflammation: elevated leucocytes and CRP.

Results

Characteristics of study population

Characteristics of patients with Spontaneous Bacterial Peritonitis (SBP) (group 1) and without Spontaneous Bacterial Peritonitis.

Most patients, who were prospectively included in this study and were admitted to the hospital, were cirrhotic because of alcohol abuse. The second cause of cirrhosis in this population was virus hepatitis (B, C or both). Group 1 patients as well as Group 2 patients were middle aged, which means 60-70 years old.

Discussion

The main finding of the study, was that infection in the abdomen in patients with cirrhosis may enhance the expression of cytokines and their receptors as demonstrated by the significant increase in the absolute numbers of cytokines' levels measured in ascitic fluid. Higher levels of IL-10, TNF- α , STNFR1, STNFR2, IL-6 and IL-1ra were detected in the ascitic fluid of patients with SBP in comparison with patients without SBP. Similar findings have been reported in various clinical settings. A number of deficiencies in the host immune defense system have been recognised in cirrhotic patients with SBP. Human studies in patients with cirrhosis and positive ascitic bacterial culture, have shown that cytokines of Th1 immune response are increased [2,4,7,8].

Competing Interests

The authors declare that they have no competing interests.

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