

SIGNIFICANCE OF INFLAMMATORY CYTOKINE IL-17 IN CHRONIC LIVER DISEASES

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Abstract

“The role of IL-17 in chronic liver disease”

Various cytokines play a huge role in the regulation of fibrogenesis. Cytokines are low molecular weight proteins that are produced and secreted mainly by activated cells of the immune system and are involved in the development of immune responses according to the cellular or humoral type. Produced transiently, they have a short half-life and act at very low concentrations by binding to high affinity receptors on the surface of target cells.

Keywords: chronic liver diseases, immune inflammatory response, damage to hepatocytes, therapy.

Introduction

Liver pathology is widespread and is considered one of the main health issues worldwide. Over the past 20 years, there has been a significant increase in liver diseases. In the Commonwealth of Independent States, 500 to 1 million people get sick with various liver diseases in a year. By now, the number of people suffering from liver diseases in the world has reached 2 billion. Every year, 2-3 million people are registered with viral, toxic, medicinal, alcoholic or autoimmune diseases. This, in turn, is explained by the role of the liver in internal and external detoxification, the metabolism of most drugs in the liver, and the intensive metabolism of proteins, fats and carbohydrates in the liver. Some diseases leave a long-lasting "metabolic footprint" when they heal. Also, alcohol and viral liver diseases are of great importance in liver diseases becoming chronic and later developing and causing liver cirrhosis and hepatocellular carcinoma. Due to the fact that Russia ranks high among other countries in terms of alcohol consumption, alcoholic damage to the liver has a special social significance [1,2]. According to European researchers, 3.8% of deaths (11.0% among men and 1.8% among women) and 4.6% of disability are caused by alcohol consumption [3]. Alcohol accounts for 1/3 percent of all causes of liver fibrosis [4].

The problem of viral hepatitis is considered one of the urgent health problems. Due to the spread of drug addiction in Russia in the last decade, the spread of viral hepatitis B through blood contact has gained special importance. About 80% of injecting drug users are found to be infected with viral hepatitis B, C, D or several types at the same time. Including mixed hepatitis B+S, B+D or the simultaneous occurrence of several types of viral hepatitis remains an actual problem. This type of hepatitis is difficult due to its clinical presentation, the complexity of early diagnosis and treatment, and the high probability of liver cirrhosis [5,6].



The liver is an important metabolic and immunological organ in the body. The liver is especially important in immunological control and synthesis of acute phase proteins. Almost all liver diseases are associated with derangement of immune cells and inflammatory homeostasis.

Cytokines are known to have a wide range of biological activities and elicit an adequate immune response. At the tissue level, cytokines are responsible for inflammation and subsequent regeneration processes. Recently, the importance of cytokines in chronic liver diseases has been widely studied [7].

Six types of IL-17A or IL-17 are known, including IL-17A through IL-17F. IL-17A and IL-17F are considered 50% homogeneous. Among these cytokines, IL-17A and IL-17F are secreted as homodimers, and IL-17A/F as heterodimers. IL-17F. While IL-17B, IL-17C and IL-17D cytokines are also considered inflammatory cytokines, IL-17A is considered to have a strong effect.

IL-17 is an inflammatory cytokine and belongs to a type of cytokine that can elicit two types of immune response. This cytokine is important in the immune response against bacterial and fungal infections. Also, this cytokine has a role in various inflammatory and autoimmune diseases [8]. Antibodies against IL-17 are currently available for psoriasis, psoriatic arthritis, and ankylosing spondylitis. In recent years, there has been a growing body of research investigating the role of IL-17 in liver damage and inflammation.

There are speculations that IL-17A is important in enhancing the fibrosis process in chronic liver diseases. These changes are attributed to an effect on the activity of stellate Ito cells in the liver. Studies have shown that IL-17A expression is increased in patients with partial hepatectomy due to the presence of HBV infection and early stages of liver cirrhosis and hepatocellular carcinoma [9]. IL-17A immunoreactivity in fibrotic tissue occurs in the inflammatory infiltrate. Therefore, it is possible to help patients with chronic hepatitis and liver fibrosis by blocking this cytokine. In addition, studies in mice have shown increased expression of IL-6, α -smooth muscle actin, collagen, and TGF- β mRNA in response to IL-17A in isolated stellate cells (HSCs). This indicates that the fibrosis process can be controlled.

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