Journal of Contemporary Medical Education
www.scopemed.org
DOI: 10.5455/jcme.20160107115910

Meeting Abstracts

Immune-class regulation in chronic Hepatitis B virus (HBV) infection and the effects of liver micro-environment on this regulation

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ABSTRACT

The immune system contains a lot of humoral and cellular components and defends the human body. But in the case of chronic HBV infection, it becomes ineffective. HBV is a hepatotropic virus infecting 350 million people around the World chronically. HBV can be transmitted through sexual intercourse, blood transfusion and prenatally. After viral entry into the hepatocytes, the virus uncoats itself in the nuclear area and tries to escape from the immune system. This escape may occur only in the 4% of the cases which ends up with chronic HBV infection. In the first 6-8 weeks of the infection, a very weak innate immune response may be detected. In the following 12 weeks, delayed and poor adaptive immune response is mounted due to the weak innate immune response. As it's known, the immune response against viruses is T cell-mediated. T cells defend against HBV by removing infected hepatocytes. This process changes the micro-environment of the liver determining which class of immune response should be mounted. The micro-environment and the tissue components educate dentritic cells to activate T-helper (Th) cells stimulating and recruiting proper immune cells controlling the proper immune-class. Two types of immune classes have been accounted for in this hypothesis: Th1, which is recruited in viral and bacterial infections and Th2 recruited basically in parasitic infections. The changes in the micro-environment of liver and some components of the HBV such as HBeAg may affect the immune class and even convert it from Th1 to Th2 in the case of HBV infection. The question in this hypothesis is whether the class switching (Th1 → Th2) may play role in chronicity of HBV and ineffectiveness of the adaptive immune response mounted against virus. In the light of this information, here we hypothesize that chronic HBV infection may be eradicated and prevented by keeping the liver micro-environment intact inducing Th1 immune-class and novel treatments as wells as new diagnosis methods for chronic HBV infections can be developed based on Th1 → Th2 immune class switching.

KEY WORDS: Chronic HBV infection; T-helper

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Received: April 07, 2016
Accepted: April 07, 2016
Published: April 07, 2016