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CASE REPORT

Resolution of chronic hepatitis C following parasitosis

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Abstract

An inefficient cellular immune response likely leads to chronic hepatitis C virus (HCV) infection. Resolution of chronic HCV infection in the absence of treatment is a rare occurrence. We report the case of a 39-year old white male with a 17-year history of chronic HCV infection, who eradicated HCV following a serious illness due to co-infection with Babesia (babesiosis), Borriela Borgdorferi (Lyme disease) and Ehrlichia (human granulocytic ehrlichiosis). We hypothesize that the cellular immune response mounted by this patient in response to his infection with all three agents but in particular Babesia was sufficient to eradicate HCV.

Key words: Hepatitis C; Babesiosis; Spontaneous viral clearance

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INTRODUCTION

Spontaneous clearance of chronic hepatitis C virus (HCV) is a rare entity. It may occur following co-infection with another agent where the increased cellular immunity facilitates HCV eradication[1,2].

CASE REPORT

This is the case of a 39-year-old white male with chronic HCV infection likely acquired from a blood transfusion during a splenectomy, following a motor vehicle accident 17 years ago. He had documented hepatitis C, genotype 1A with a viral load of 772000 IU/mL and two liver biopsies five years apart, demonstrating mild fibrosis.

The patient was admitted to our institution following a 4-wk history of fever, headache and profound malaise. Laboratory values were as follows: 409 IU/mL AST, 89 IU/mL ALT, 46000 white blood cells, and 21.2 hematocrit with visible target cells and schistocytes on blood film. A blood smear revealed the presence of intracellular erythrocytic inclusions with a corresponding parasitemia level of 11.2%, consistent with babesiosis. He was commenced on intravenous azithromycin and atovaquone. Further work up also revealed a positive EIA for Lyme disease, confirmed by Western blotting, in addition to positive IgM antibodies to Ehrlichia. Doxyclicine was added to the treatment regimen. The patient was discharged from hospital seven days later with a rising hematocrit and a parasite load of 0.4%.

Surprisingly, hepatitis C RNA was undetectable from the serum sample taken two days following hospital admission. The lower limit of detectable virus via quantitative poylmerase chain reaction (PCR) technique at our institution is 600 IU/mL. Repeat testing demonstrated normal ALT and AST and a negative HCV RNA level via qualitative PCR, which is sensitive to a level of virus greater than 100 IU/mL. The patient continued to have normal ALT and AST and remained persistently HCV RNA negative by qualitative PCR testing four years after his acute illness (Figure 1).

DISCUSSION

Babesiosis is a tick-borne illness commonly seen in Europe and the United States, caused by malaria-like parasites that infect red blood cells and induce hemolysis. Infection is transmitted to humans from cattle or rodents *via* the Ixodid tick. This variety of tick also transmits Lyme disease and ehrlichiosis and simultaneous infection with all three pathogens can occur. We postulate that co-infection with these pathogens caused CD4 cell proliferation and increased production of endogenous interferon gamma (IFNγ), which proved sufficient for hepatitis C viral clearance. Spontaneous clearance of acute HCV is dependent on a broad based CD4+ and CD8+ T cell response, and it is likely that both cytolytic and non-cytolytic mechanisms act to clear infected hepatocytes[3]. Non-cytolytic effector mechanisms include production of cytokines such as IFNγ, which has been shown to inhibit HCV replication in some but not all model systems[4-6]. Resolution of the etiologic agent of Babesia

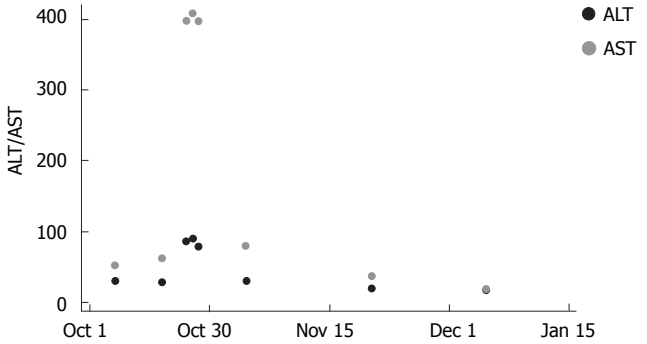

Figure 1 Scatter plot of AST and ALT before, during and after hospitalization.

microti infection in murine models is dependent on both CD4+ T cells and to a lesser extent of IFNγ production[7,8] and elevations of IFNγ are seen during acute Lyme and Ehrlichia infection as well[9,10]. Therefore, the acute parasitic infections in this case may have stimulated sufficient CD4+ T cells and cytokines to allow resolution of longstanding HCV. Resolution of chronic HCV following acute HBV superinfection[1,2] and withdrawal of immunosuppressant[11,12] has also been reported, demonstrating that at least in some individuals the deficient immune response seen in chronic HCV can be overcome.

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