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Upregulation of IFN- γ and IL-12 is associated with a milder form of hantavirus hemorrhagic fever with renal syndrome

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Abstract

© 2014, Springer-Verlag Berlin Heidelberg. Hantavirus hemorrhagic fever with renal syndrome (HFRS) is a zoonotic disease characterized by acute onset, fever, malaise, and back pain. As the disease progresses, hemorrhagic disturbances and kidney dysfunctions predominate. The examination of tissue collected postmortem supports the premise that virus replication is not responsible for this pathology; therefore, it is widely believed that virus-induced immune responses lead to the clinical manifestations associated with HFRS. The overproduction of inflammatory cytokines is commonly reported in subjects with HFRS and has given rise to the hypothesis that a so-called “cytokine storm” may play a pivotal role in the pathogenesis of this disease. Currently, supportive care remains the only effective treatment for HFRS. Our data show that serum levels of interferon (IFN)- γ , interleukin (IL)-10, CCL2, and IL-12 are upregulated in HFRS cases when compared to healthy controls and the level of upregulation is dependent on the phase and severity of the disease. Furthermore, we observed an association between the mild form of the disease and elevated serum levels of IFN- γ and IL-12. Collectively, these observations suggest that the administration of exogenous IFN- γ and IL-12 may provide antiviral benefits for the treatment of HFRS and, thus, warrants further investigations.

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