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The Conceivable Influence of Persistent Genotype-4 Hepatitis C Virus Infection on Cellular Immune Subsets before, during and after Pegylated Interferon-α and Ribavirin Therapy

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Hepatitis C virus (HCV) infection is a major public health problem with an estimated 3-4 million people infected each year worldwide. 20–30% of individuals acutely infected with HCV will spontaneously clear the virus, with the remaining 70–80% developing persistent HCV infection. The interplay between the virus and host innate and adaptive immune responses determine the outcome of HCV infection (Rauch et al., 2009). The present study aims to determine the level of cellular immune subsets in responders and non-responders HCV-infected patients as a result of the standard treatment (PEG-IFN and ribavirin) and to correlate the results with the major HCV genotypes in Kuwait. Data of the immunophenotyping for cellular subsets include 30 healthy controls and genotype-4 HCV-infected patients (39 responders vs. 21 non-responders) at baseline and after treatment. The immunophenotyping was evaluated by flow cytometry using antibodies specific to mature T cells, T cytotoxic cells, regulatory T cells, T helper cells, activated T cells, natural killer cells, NKT cells and pan B cells. There were significant differences in the mean values of percentages for T helper cells, T cytotoxic cells, B cells, NK cells, NKT cells and activated T cells between HCV-responder vs. HCV-non-responder patients. Also, significant differences were noticed in the mean values of the absolute counts for T helper cells, B cells, NK cells, and T cells. Cellular subsets of the immune system play an important role in the pathogenesis, progression, and clearance of HCV. The screening for multiple cellular markers in the present study showed significant variations in the absolute counts and percentages of essential immune cellular subsets. These findings could lead to new possibilities for immune-based interventions and/or vaccine development with the aim of restoring functional antiviral T cell responses combined with improved viral clearance.

Recent Publications

1. Essa S, Pacsa A, Raghupathy R, et al., 2009. Low levels of Th1-type cytokines and increased levels of Th2-type cytokines in kidney transplant recipients with active CMV infection. Transplantation Proceedings, 41:1643-1647.
2. Essa S, A. Owayed, H. Altawalah, M. et al., (2015) The Prevalence of Human Bocavirus, Human Coronavirus-NL63, Human Metapneumovirus, Human Polyomavirus KI and WU in Respiratory Tract Infections in Kuwait. Medical Principle and Practice, 24: 382-387.
3. Essa S, A. Owayed, H. Altawalah, M. et al., (2015). Mixed viral infections are circulating in hospitalized patients with respiratory tract infections in Kuwait. Advances in virology, 2015: 714062.
4. Essa S; Al-tawalah H, AlShamali S, et al., (2017). The Potential Influence of Human Parainfluenza Viruses Detected During Hospitalization among Critically Ill Patients in Kuwait, 2013- 2015. Virology Journal, 14(1):19.
5. Essa S, Chehadeh W, Al-Nakib W (2017). Human Polyomavirus WU in Patients with Respiratory Tract Infection in Kuwait. Medical Principle and Practice. doi: 10.1159/000485036.

Biography

Sahar Essa has her experience and passion in improving the knowledge about respiratory viruses and viral immunopathology. Her published work reflects years of practice, experience and dedication in research. Her research shed the light on the impact of the circulating respiratory viruses and the cellular immune responses to Cytomegalovirus and Hepatitis C virus.

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