

Different cytokine patterns in patients coinfecting with hepatitis C virus and *Schistosoma mansoni*

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Schistosoma mansoni (*S. mansoni*) and hepatitis C virus (HCV) coinfection is common in Egypt and other developing countries. Patients coinfecting with HCV and schistosomiasis exhibit a unique clinical, virological and histological pattern manifested by viral persistence with high HCV RNA titers as well as higher necroinflammatory and fibrosis scores in their liver biopsy samples. Dual infections of schistosomiasis and viral infections display significant influences on host immune reactions including cytokine shift pattern alteration, cytotoxic T lymphocyte response and other impaired immunologic functions with diminished capacity to clear the virus. We investigated the cytokine pattern against HCV and *S. mansoni* antigens in patients coinfecting with HCV and *S. mansoni* and compared them with responses in patients infected with HCV or *S. mansoni* alone. This study included 4 groups; (Gr I) included 20 patients infected with chronic HCV, their sera were reactive for anti-HCV antibodies, samples were verified for RNA detection to identify those who have viremia. (Gr II) included 15 patients infected with schistosomiasis alone, they were subjected to detection of *S. mansoni* ova in stool, rectal snip or serological test. (Gr III) included 20 patients with chronic HCV and schistosomiasis coinfection, which were diagnosed by the above-mentioned criteria. (Gr IV) included 15 healthy individuals, who were matched for age and sex and have no evidence of liver diseases served as control subjects. The results showed that a highly significant increase in serum IFN-gamma and IL-18 levels in patients infected with HCV alone compared with the other patient groups and control. On the other hand, a highly significant increase was found in serum IL-4 and IL-10 levels in coinfecting patients and patients with schistosomiasis alone compared with the control but a significant increase was found in the two groups compared with HCV patients. A significant increase in serum IL-4 and IL-10 were also found in HCV patients compared with the control. In conclusions, our data showed that coinfecting patients have dominant Th2 cytokine profile induced by *S. mansoni* and this Th2 antagonized and down-regulated the antiviral activities of Th1 cytokine profile in HCV infection that probably acquired after *S. mansoni* infection resulting in failing to mount significant HCV specific Th1 response and thereby fail to clear the virus in coinfecting, compared with patients infected with HCV or schistosomiasis alone.