Interferon Gamma mRNA Gene Expression from Peripheral Blood Mononuclear Cells in Hepatitis C Virus Infection: Relation to Viremia and Combined Peginterferon Ribavirin Response

Background and Objectives:

It would be most helpful, in hepatitis C virus (HCV), to identify serological markers associated with poor treatment outcome at baseline, or in the early phase of therapy in order to spare unnecessary side effects of an expensive antiviral therapy (ribavirin & peginterferon). We hypothesized that pretreatment gamma interferon gene expression level in peripheral blood mononuclear cells (PBMCs) and its protein could be used to predict treatment outcome (responders and non-responders) in Egyptian HCV patients.

Methods:

This study involved 29 HCV subjects; they were classified after the 24 weeks of a treatment regimen (ribavirin & peginterferon) into two groups (16 patients with non-detectable HCV classified as responders & 13 HCV patients who had detectable HCV classified as non-responders). Baseline interferon gamma (IFN γ) gene expression was measured by real time-polymerase chain reaction (RT-PCR) methods and glyceraldehyde-3-phosphate dehydrogenase (GAPDH) as a housekeeping gene using syber green method. Serum Interferon gamma level was determined by an ELISA method.

Results:

It was shown that among HCV patients 7/13 (54%) non responders and 2/16 (13%) of responders showed elevated blood IFN-γ mRNA levels prior to the therapy ($p<0.05$). While, serum IFN-γ level in the non-responder group was undetectable compared with the responder group ($p<0.01$). There was no correlation between IFN-γ expression levels and each of: stage of fibrosis, viral load level, serum IFN-γ level. An IFN-γ gene expression cutoff level of 0.54 at baseline (before starting the treatment regimen) can discriminate patients with response from patients with failure of response.

Conclusions:

IFN- γ was higher in PBMCs of non-responders when compared to responders and that measuring IFN-γ can be used in patients infected with HCV to predict treatment failure.

Key words: Interferon-gamma mRNA expression - predictor of antiviral treatment response - serum level of interferon-gamma – hepatitis C virus