The role of hepatitis C virus NS5A region mutation and SNP IL-28B of host to support successful pegylated interferon and ribavirin treatment in patients with HCV-HIV coinfection: a prospective cohort study

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Abstrak

Background: HIV infection in HCV-infected patients accelerates disease progression and reduces the success rate of Peg-IFN/RBV treatment. HCV mutation in NS5A-ISDR/PKR-BD region improved the outcome in HCV monoinfection treated with Peg-IFN/RBV. SNP-IL28B polymorphism is predicted to have an effect on HCV quasispecies evolution. However, the role of NS5A mutation and SNP IL-28B in HIV-HCV coinfection is still unclear. The aim of the study is to determine the role of HCV NS5A-ISDR/PKR-BD mutation and SNP IL-28 polymorphism on the successfulness of Peg-IFN/RBV therapy in HCV-HIV coinfection.
Methods: prospective cohort was performed in this study. Plasma sample were obtained from 30 and 8 patients with HCV-HIV coinfection and HCV monoinfection, respectively. PCR nucleotide sequencing was performed after RNA virus extraction and cDNA synthesis. Protein secondary structure and prediction of mutation function were analyzed using PredictProtein (PP) program.
Results: sixteen HCV-HIV coinfected patients and none from eight HCV patients achieved sustained virological response (SVR). ≥1 non-neutral mutation was found in 24/30 HCV-HIV coinfection and more frequent in SVR group (14 patients). ≥1 non-neutral mutation were found statistically significant for overall SVR achievement ($p<0.05$) in all patients regardless of coinfection or monoinfection status. Of the 27 HCV-HIV coinfected patients with CC-gene, 21 subjects had non-neutral mutation. The structure which was expected as NS5A binding site structure was different from consensus (wild type) in SVR group, while the structure was similar to consensus in non-SVR group.
Conclusion: having ≥1 non-neutral mutation was associated with SVR achievement in Peg-IFN/RBV therapy, regardless of monoinfection and coinfection status.