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Genetic variability of the core protein in hepatitis C virus genotype 4 and its implication on pegylated interferon and ribavirin therapy

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Abstract

Hepatitis C virus (HCV) shows remarkable genetic diversity, contributing to its high persistence and varied susceptibilities to antiviral treatments. Previous studies have reported that the substitution of amino acids in the HCV subgenotype 1b core protein in infected patients is associated with a poor response to pegylated interferon and ribavirin (PEG-IFN/RBV) combined therapy. Because the role of the core protein in HCV genotype 4 infections is unclear, we aimed in this study to compare the full-length core protein sequences of HCV genotype 4 between Saudi patients who responded (SVR) and did not respond (non-SVR) to PEG-IFN/RBV therapy. Direct sequencing approach and advanced sequence analysis software were utilized. Our data revealed that there is a significant association between core protein mutations, particularly at position 70 ($Arg^{70}Gln$), and treatment outcome in HCV subgenotype 4d clinical samples. However HCV subgenotype 4a clinical samples showed no significant association between core protein mutations and treatment outcome. In addition, amino acid residue at position 91 was well-conserved among our clinical samples where Cys^{91} is the dominant amino acid residue. Furthermore, our data showed point mutations at different positions that were flagged as 'rare' mutations by negative BLOSUM scores. These findings provide a new insight into HCV genotype 4 among effected Saudi population where the knowledge of HCV core gene polymorphisms is inadequate.

Biography:

Mohammed N. Al-Ahdal (a Bio-Pharmacist) has completed his Ph.D. in Microbiology and Immunology from the State University of New York at Buffalo in 1985. He is the now the Chairman of the Department of Infection and Immunity at King Faisal Specialist Hospital and Research Center in Riyadh, Saudi Arabia and an Adjunct Professor at Sassari University in Italy and Brunel University in the U.K. He has published more than 98 papers in reputed journals and serving as an editorial board member of a few reputed scientific journals.