Study on the hepatitis B virus vaccine response among HIV-1 infected individuals in Salem

D Thirunavukkarasu[1], S Rajesh[1], S Deepa[1], L Arunachalam[1], AV Kanchana[1], T Umaarasu[2]

[1]Department of Microbiology, Government Mohan Kumaramangalam Medical College and Hospitals, Salem, Tamilnadu, India, [2]Department of Microbiology, Swamy Vivekanandha Medical College Hospital and Research Institute, Tiruchengode, Salem, Tamilnadu, India

ABSTRACT

Introduction: Hepatitis B virus (HBV) infection is a significant public health concern, and its prevention through vaccination is crucial. Suboptimal responses to the vaccine have been observed, and further research is needed to address and improve vaccine efficacy. This study investigates the immunogenicity of HBV vaccination in HIV-infected individuals, focusing on CD4+ T-cell counts and anti-HBs antibody responses. **Materials and Method:** This study was conducted at the ART Centre, Government Mohan Kumaramangalam Medical College & Hospitals and enrolled 165 participants (84 adults and 81 children) to evaluate their immune response to HBV vaccination. Demographic data collection and anti-HBs titre levels were done at baseline, and participants received the HBV vaccination series. Following the final dose, investigations were conducted to assess their immune response, including CD4+ T-cell counts and HIV viral load. The Institutional Ethics Committee approved the study protocol. **Results:** Among the 165 participants, 70% had undetectable HIV viral loads. Of 165 vaccinated, 17 were identified as non-responders, characterized by anti-HBs titers <10 mIU/mL. Adult non-responders (n=10) had baseline CD4+ T-cell counts ranging from 55-1634 cells/µL (median: 844 cells/µL), with 1 participant having a viral load <150 copies/mL, 5 having <600 copies/mL, and 4 having >10,000 copies/mL. Child non-responders (n=81) had baseline CD4+ T-cell counts ranging from 72-2146 cells/µL (median: 1109 cells/µL, IQR: 480-689), with 1 participant having a viral load <150 copies/mL, 3 having <1000 copies/mL, and 2 having >10,000 copies/mL. **Conclusion:** This study investigated the immunogenicity of HBV vaccination in individuals co-infected with HIV. The findings revealed suboptimal immune responses to HBV vaccination, highlighting the need for targeted strategies to enhance vaccine efficacy. Further analysis of single nucleotide polymorphisms (SNPs) among non-responders may uncover genetic factors contributing to non-responsiveness, ultimately informing public health interventions aimed at reducing the burden of HBV co-infection in HIV-infected individuals