# Evaluation of Hematological, Biochemical Profiles and Molecular Detection of Envelope Gene (gp-41) in Human Immunodeficiency Virus (HIV) among Newly Diagnosed Patients


## ABSTRACT

The Human Immunodeficiency Virus (HIV) is a highly morphic, retrovirus that rapidly evolves through mutation as well as recombination. Because of the immunocompromised status in HIV patients, there is often a higher chance of acquiring different secondary infections followed by liver cirrhosis, hepatitis B & C, and HIV-associated nephropathy. The current study was conducted to see the prevalence of secondary infections, hematological and biochemical markers for liver and renal associated diseases, and to detect the envelope gene (GP41) in newly diagnosed HIV patients. A total of 37 samples were collected from HIV-positive patients registered in different hospital settings under the National AIDS control program. The collected samples were processed for hepatitis B, hepatitis C, hematological analysis, and biochemical analysis. To identify the envelope gene in newly diagnosed HIV patients, polymerase chain reaction (PCR) was performed using four gene-specific primers. The HIV infections were seen more in male as compared to females. A significant decrease in complete blood count was observed in HIV patients when compared to healthy individuals. There was a significant increase in aspartate aminotransferase (AST), alanine aminotransferase (ALT), urea, and creatinine observed in HIV patients. No significant difference was observed in alkaline phosphatase (ALP), total bilirubin, and albumin levels when compared to healthy control. Anemia was observed in 59.4% of HIV patients. A total of three (8.1%) patients were found to be co-infected with hepatitis B and one (2.7 %) was co-infected with hepatitis C. Out of these 37 tested samples, a total of four showed the successful amplification of the envelope gene. This study provides platform for the health care facilitators to regularly monitor the signs, symptoms and clinical biomarkers of HIV-associated infections to prevent toxicity at an early stage to improve the quality of life (QoL) and minimize the mortality rate in HIV patients. Envelope gene mutating frequently results in drug resistance, and thus future research on polymorphism analysis will reveal points of substitutions to improve drug designing.