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# THE PATTERN OF TRANSAMINASE ABNORMALITY AMONG HIV AND HBV CO-INFECTED WOMEN ON ART IN LILONGWE, MALAWI

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**Background:** Hepatitis B and antiretroviral therapy (ART) have been established to cause liver damage. We compared the changes in the levels of alanine amino transferase (ALT) in HBV/HIV co-infected and HIV infected women on ART to determine liver disease among women on ART in Lilongwe Malawi using data from the BAN study.

**Methods:** We conducted a secondary data analysis from the BAN study to investigate the changes in the levels of ALT among HIV/HBV co-infected and HIV mono-infected women who were randomised into the maternal ART arm. In brief, the BAN study assessed the benefit of nutritional supplementation given to women during breastfeeding, the benefit and safety of antiretroviral medications given either to infants or to their mothers to prevent HIV transmission during breastfeeding and the feasibility of exclusive breastfeeding followed by early, rapid breastfeeding cessation. ALT was monitored up to 48 weeks with an average of 12 follow-ups per individual. Continuous variables i.e. age, ALT and CD4 count were compared between HIV/HBV co-infected women and HIV mono-infected women using the Wilcoxon rank sum test. Multiple regression analyses were performed using longitudinal generalised linear mixed models to evaluate the relationship between ALT and HIV/HBV co-infection, among HIV-infected women, controlling for ART regimen, CD4 count and visit number. All individuals were included in the analysis regardless of the different numbers of follow-up visits. To show the change of ALT levels longitudinal line graphs were used. Predictions of ALT levels per visit were also plotted using margin plots.

**Results:** The study subjects comprised of 544 women of whom 5.6% were HIV/HBV co-infected. The age range of the study population was 16-45 years; median age at enrolment was 26 (IQR: 22-29). The median ALT enzyme level of HIV/HBV co-infected individuals was slightly higher at baseline (13 UI/L (10-16) vs 14 UI/L (11-18,  $p=0.10$ ) and at the last follow-up (17UI/L (14-22) vs 19 UI/L (16-26,  $p=0.04$ ) compared to HIV mono-infected counterparts. HIV/HBV co-infected women were 3.28 times (1.43-9.03  $p=0.01$ ) more likely to have abnormal ALT, compared to HIV mono infected counterparts. Individuals those who were initiated on Nelfinavir as first line ART were 3.22 times (1.85-5.59  $p=0.001$ ) more likely to have elevated ALT compared to those that were initiated on LPV/r based regimen. Moderately immune suppressed women (CD4 count of between 200 to 500 cells/dl) were 0.38 times less likely to have elevated ALT (0.15-0.46) while women who were severely immune suppressed were 3.51 times more likely to have abnormal ALT. Overall there was an increase in the level of ALT per each subsequent visit.

**Conclusion:** Individuals co-infected with HIV/HBV generally had higher levels of ALT compared to HIV mono-infected individuals and this increased over time. The current study suggests that monitoring of ALT in patients co-infected with HIV/ HBV on ART should be performed regularly, and the caution should be taken when prescribing first line ART.

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