

IMMUNOLOGICAL NON-RESPONSE AND LOW BLOOD HEMOGLOBIN LEVELS ARE PREDICTORS OF INCIDENT TB AMONG HIV-INFECTED INDIVIDUALS ON ART IN BOTSWANA

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Background

Despite availability of ART, Tuberculosis remains a leading cause of morbidity and mortality among HIV infected individuals. We sought to determine risk factors for incident TB in patients with advanced immunodeficiency in Botswana.

Methods

We analyzed data from individuals enrolled into an observational cohort evaluating the efficacy and tolerability of Truvada™ (“*Bomolemo study*”) in Gaborone, Botswana between 2008 and 2011. Risk factors for incident TB were determined using multivariate Cox proportional hazards regression with time-dependent covariates.

Results

Of 300 participants enrolled, 45 (15%) had TB diagnosed at baseline. During 428py of follow-up, the incidence rate of TB was 3.04/100py (95% CI, 1.69-5.06), with 60% of the cases occurring within 3 months of initiation. Incident cases had low baseline CD4 counts and hemoglobin levels; 153cells/mm³ (Q1, Q3: 82, 242; p=0.69) and 9.2g/dl (Q1, Q3: 8.5,10.1; p<0.01) respectively. In univariate analysis, low BMI (HR 0.73; 95% CI, 0.58-0.91; p=0.01) and hemoglobin levels <8g.dl (HR 10.84; 95% CI, 2.99-40.06; p<0.01) were risk factors for TB. Time to incident TB diagnosis was significantly reduced in patients with poor immunological recovery (Log rank test, p=0.04). There was no association between baseline viral load and risk of TB (HR 1.75; 95% CI, 0.70-4.37).

Conclusion

Baseline hemoglobin levels are significant predictors of incident tuberculosis while on ART. Longitudinal studies investigating utility of iron biomarkers in identifying patients at risk are needed. Furthermore, additional strategies are required for patients with poor immunological recovery to reduce excess risk of TB.