COMPARISON OF IMMUNE PROFILES WITH SPUTUM SMEARS STATUS IN TUBERCULOSIS PATIENTS CO-INFECTED WITH HUMAN IMMUNODEFICIENCY VIRUS

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ABSTRACT

Title

To compare the immune profiles with sputum smear status in pulmonary tuberculosis patients co-infected with human immunodeficiency virus.

Background

The interaction between mycobacterium tuberculosis and HIV results in more rapid progression of tuberculosis (TB) and HIV-induced immunosuppresion. Diagnosis of TB in these patients is more difficult due to its atypical presentation. There are contradicting results from studies investigating TB diagnostic methods and immune profiles. The study aimed at comparing the diagnostic methods (Direct AFB smear, Concentration smear and Immunofluorescence microscopy) with immune profiles in adult pulmonary tuberculosis patients co-infected with HIV.

Study Area: AMPATH site, MTRH

Study Design: It was a Cross sectional study.

Methods: Blood and sputum samples from 73 eligible subjects were analyzed in the laboratory. The blood samples were analyzed by FACScalibur flow cytometer and coulter counter to determine immunophenotype and complete blood counts of the patients. Smear status was determined by direct microscopy and immunofluorescence microscopy.

The laboratory results were then coded and analyzed using SPSS version 12.01 for statistical analysis. Standard statistical procedures including frequency tables, cross-tabulation and measures of central tendency (Mean (sd) and Median (IQR) were employed. Kappa statistic was used to determine the agreement between tests. A p-value less than 0.05 was considered statistically significant.

Results

The mean age was 36.22 years (Sd 9.45). The median CD4 count was 94 cells/µl (IQR 25 cells/ µl, 194 cells /µl). There was a substantial agreement between direct AFB microscopy smears and immunofluroscence AFB smears tests (kappa = 0.707, 95% CI [0.513-0.760]). The sensitivity of direct AFB smear test was 0.68 (95% CI [0.0561-0.713]) and its specificity was 0.979 (95% CI [0.917-0.996]). The positive predictive value (PPV) and the negative predictive value (NPV) were 0.944(95% CI [0.780-0.990]) and 0.855 (95% CI [0.801-0.869]), respectively. The immune cell markers medians of females were higher compared to males except CD 19. With regard to blood cells, males had higher median RBC, HGB, HCT and monocyte while the females had higher median in WBC, PLT, lymphocyte and eosinophils. There was a significant difference in the median of CD 19 between AFB positive smears and AFB negative smears among suspected TB co-infected patient (p=0.006).

Significance of Findings

There was a decline in levels of CD4 and that the levels of CD8 counts remained unchanged (within the reference ranges) among these patients. There no was no significant differences among the two CD markers in relationship to the smear status of the patient. It is possible that the B cells might have a role in the immunity against tuberculosis, though this could not be conclusive proved in the study. This was due to the significant difference in the relation of B cells and the smear status of the patients. Furthermore sensitivity of AFB direct microscopy was lower in TB patient co-infected with HIV.