**Heme oxygenase-1 and neopterin plasma/serum levels and their role in diagnosing active tuberculosis and latent tuberculosis among HIV/TB co-infected patients**

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**Abstract**

Background: Tuberculosis (TB) diagnosis in the presence of HIV co-infection remains challenging. Heme oxygenase 1 (HO-1) and neopterin have shown to be as potential biomarkers for TB diagnosis. Infection of macrophages with Mycobacterium tuberculosis (M. tb) causes the production of HO-1 and neutering and previous studies have shown these to be markers of immune activation [1] [2] This study was conducted to determine the levels of HO-1 and neopterin and their utility in the diagnosis of TB among individuals enrolled in the Community Health and Social Network of Tuberculosis (COHSONET) study and the Kampala TB Drug Resistance Survey (KDRS).

**Methods:** A total of 210 participants were enrolled in a study of a diagnostic method aimed at determining the levels of HO-1 and neopterin, and determine their diagnostic accuracy as biomarkers in TB diagnosis from March to May 2019. M. tb culture was performed on sputum to confirm active TB (ATB) and QuantiFERON TB gold test to confirm latent TB infection (LTBI). ELISAs were performed to determine the levels of HO-1 and neopterin. Data analysis was done using Kruskal Wallis and Receiver Operating Characteristic curves to determine the diagnostic accuracy.

**Results:** HO-1 levels among ATB/HIV patients, LTBI/HIV patients and TB negative individuals were 10.7ng/ml (IQR: 7.3-12.7ng/ml), 7.5ng/ml (IQR: 5.4-14.1ng/ml), 3.3ng/ml (IQR: 2.0-7.1ng/ml) respectively. Neopterin levels among ATB/HIV patients, LTBI/HIV patients and TB negative individuals were 11.7ng/ml (IQR: 5.219.4ng/ml), 8.8ng/ml (IQR: 2.4-19.8ng/ml), and 5.9ng/ml (IQR: 3.410.2ng/ml) respectively. HO-1 showed a sensitivity of 78.57% and a specificity of 71.43% with area under the curve (AUC) of 0.839 when used to diagnose ATB. HO-1 showed AUC of 0.79, sensitivity of 70% and specificity 70% when used to diagnose LTB. Neopterin showed a sensitivity of 61.43% and a specificity of 74.29% with AUC 0.71 when used to diagnose ATB. Neopterin as a biomarker in LTB diagnosis showed AUC of 0.56 which was not significant.

**Conclusion:** HO-1 and neopterin are valuable diagnostic biomarkers for ATB and LTB which could be further utilized to develop less costly rapid diagnostic tools to overcome current TB diagnostic Challenges

**Biography**

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