

## ABSTRACT

**Background:** The diagnosis of extrapulmonary tuberculosis in tissue sections is challenging and this causes delayed diagnosis, missed diagnosis and misdiagnosis of tuberculosis. Immunohistochemistry is believed to improve the accuracy of the diagnosis of tuberculosis in formalin-fixed, paraffin-embedded tissue sections. However, the diagnostic utility of immunohistochemistry for the diagnosis of extrapulmonary tuberculosis has not been assessed in Uganda.

**Objective:** Our aim was to assess the diagnostic utility of anti-*Mycobacterium tuberculosis* antibody staining for the detection of mycobacterial antigens in tissue specimens at Mbarara Regional Referral Hospital.

**Study Methods:** This was a cross-sectional study conducted between September 2023 and November 2023; the research involved 87 archived tissue specimens of patients with clinical suspicion of EPTB. Tissue blocks were selected based on their preservation status, availability of medical records and their suitability for sectioning for further analysis.

Demographic data were collected from the register review process, Hematoxylin and Eosin (H & E)

**Results:** A total of 87 specimens retrieved from the bio-repository were analyzed. Lymph nodes constituted majority (n=50; 57%) of the specimens. On histopathology, 52.87% (n=46) specimens had granulomatous inflammation suggestive of EPTB while 47.12% (n=41) were dot suggestive. Of the 87 specimens analyzed, 17 (19.5%) stained positive by the ZN technique while 70 (80.5%) were negative. The sensitivity, specificity, PPV and NPV of anti-*Mycobacterium tuberculosis* antibody staining were 74.47%, 80.00%, 81.40% and 72.73% respectively.

Conclusion: Although the study found a relatively high and balanced sensitivity, specificity, PPV and NPV of anti-*Mycobacterium tuberculosis* antibody (ab905) staining, further validation of its application in diagnostics is recommended through large prospective studies employing monoclonal anti-*Mycobacterium tuberculosis* antibodies.

**What this study adds:** This research provides additional insights into the potential role of immunohistochemistry in the diagnosis of extrapulmonary tuberculosis in tissues.

**Key words**

Anti-*Mycobacterium tuberculosis* antibody (ab905); Extrapulmonary tuberculosis; Formalin-fixed paraffin-embedded; Hematoxylin & Eosin; Immunohistochemistry; Ziehl-Neelsen.

Introduction

Study Design