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Drug sensitive and resistant tuberculosis and zoonotic infections as causes of lymphadenitis, Papua New Guinea

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Abstract text

Background: Papua New Guinea (PNG) is one of 30 high TB burden countries - estimated incidence 432/100,000; multi-drug resistant (MDR-TB) incidence 23/100,000. The proportion of extra-pulmonary TB (EPTB) is relatively high (~42%); most is TB lymphadenitis (TB-LN) in children. EPTB is infrequently bacteriologically confirmed. *Mycobacterium bovis* has been associated with higher proportions of TB-LN. In three PNG provinces we aimed to determine proportions of presumptive TB-LN attributable to *Mycobacterium tuberculosis* complex (MTBC) and specifically *M. bovis*.

Methods: We aimed to enrol consecutive patients with clinically presumptive TB-LN, evaluate, and offer fine needle aspirate (FNA) of enlarged LN. Samples were assessed by cytology, Xpert MTB/RIF or Ultra, and culture with drug susceptibility testing.

Results: Among 223 participants with a bacteriology result: 60% female, median age 20 years (IQR 10-32), 45% lived in rural settings, 91% were BCG vaccinated, 21% had a previous TB diagnosis (61% EPTB) and 45% had close contact with someone with TB in the last 2 years. Most common symptoms were persistent enlarged LN (100%), fever/night sweats (48%), weight loss (46%); 6% of participants also had presumptive pulmonary TB. Laboratory test results on LN-FNA: 36% cytology consistent with TB, 26% Xpert MTB positive, 17% culture positive *M. tuberculosis*, 0 culture positive *M. bovis*. Of bacteriological MTBC positives (27%), 12% (7/58) were rifampicin resistant (RR). Cytology diagnosed five cancers. Bacteriological confirmation of TB was associated with visible LN 5-10cm on both sides of the neck, enlarged for at least 8 weeks, in people age ≥15years.

Discussion: LN-FNA of LN with appropriate characteristics is important to verify clinical diagnosis of presumptive TB-LN. RR-TB in 12% of MTBC positives highlights bacteriological testing is crucial to inform correct treatment decisions. Cytology can support TB or alternative diagnoses. We found no evidence of zoonotic TB (*M. bovis*) contributing to the high EPTB proportion.