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Mycobacterium bovis in rural Tanzania: Risk factors for infection in human and cattle populations

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Abstract

Although bovine tuberculosis is widespread throughout Africa, very little is known about risk factors for *Mycobacterium bovis* infection in either human or cattle populations. A human case–control study was conducted in northern Tanzania, comparing risk factors and prevalence of cattle interdermal test positives of cases (cervical adenitis cases from which *M. bovis* was isolated) with age- and sex-matched controls (selected at random from potential hospital attendees within the community). A cattle cross-sectional study was also set-up involving 27 villages selected at random in four districts, with 10,549 cattle and 622 herds tested, and questionnaire surveys conducted in 239 households. *M. bovis* was confirmed in seven of 65 (10.8%) human cervical adenitis cases, of which only one came from a household owning infected cattle. *M. bovis* in human patients was associated with families in which a confirmed diagnosis of tuberculosis had previously been made ($p < 0.001$) and with households far (>100 m) from neighbours ($p = 0.003$). In cattle, overall prevalence of intradermal test positives was low at 0.9% (0.70–1.06%), but widespread, with 11.8% (8.44–13.17%) herds containing at least one reactor. Prevalence of intradermal test positives increased significantly with cattle age ($p < 0.001$). Herds with the following risk factors had a significantly greater prevalence of intradermal test positives: >50 cattle in the herd ($p = 0.024$); herds housed inside at night ($p = 0.021$) and herds in contact with wildlife ($p = 0.041$). Furthermore, villages that experienced annual flooding had a higher prevalence of infection ($p = 0.043$).

Keywords

Mycobacterium; Tuberculosis Risk; factors Tanzania; Cattle