

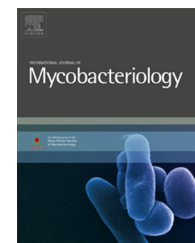


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Mycobacterial coinfection and persisting bovine tuberculosis—Has the time arrived for a policy review?

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ABSTRACT

Objective/Background: Bovine tuberculosis (BTb) is mainly a disease of cattle, although it continues to infect human populations across the world. Operation of a test and slaughter plan in Iran since 1981 has lowered the frequency of BTb from >5% to <0.14% at the national scale. In 2015, unusual uncontrollable epidemics of BTb were detected in two cattle farms in municipal suburbs of Qazvin and Isfahan. These farms had a tuberculin-test-certified record of BTb-free status for the past 5 consecutive years, with no new cattle registered with either of the two herds during this time period. Routine tuberculination of the bovinds in 2015 resulted in the detection of tuberculin-positive animals that were subsequently removed from the herds. Serial tuberculin tests improved the situation, as new reactors were found each time. The aim of this research is based on isolation and identification of *Mycobacterium* from infected animals in both farms.

Methods: To investigate the situation, major mesenteric/mediastinal lymph nodes from the culled reactor animals along with specimens from bulk milk tanks, trapped rats living on the farms, and environmental specimens were collected and subjected to bacterial culture. Tuberculin-positive cattle were also subjected to paratuberculosis enzyme-linked immunosorbent assay (ELISA), ESAT-6 ELISA, and gamma-interferon tests.

Results: In bacterial culture, *Mycobacterium bovis*, *Mycobacterium microti*, and *Mycobacterium avium* subsp. *paratuberculosis* were isolated from collected specimens at both farms.

Conclusion: There is circumstantial evidence supported by previous studies to expect a high frequency of *M. avium* subsp. *paratuberculosis* infection in Iranian cattle/sheep farms. This observation might explain the large skin reaction size seen at the avian tuberculin injection site in tested animals in these farms. Introduction of a third infection with *M. microti*, possibly by rodents visiting the farms, might have triggered immunological reactions that have

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ended the surge of BTb. If correct, we assume that a technical review of the Iranian test and slaughter scheme against BTb is required to address persisting cases of BTb in disease-free farms, as described here.

Conflict of interest

There is no conflict of interest to declare.