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Editorial

An Overview on the Clinical Diagnosis of the Brucellosis in Humans

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EDITORIAL

Brucellosis was most likely first acquired by humans shortly after the domestication of livestock, camel, sheep, goat, and pigs, and because person-to-person transmission is rare, humans represent a dead end in the disease's cycle. Because brucellosis is not a long-term infection in people and is nearly exclusively transmitted to humans by direct or indirect contact with sick animals or consumption of their contaminated products, preventing the disease in livestock is crucial for avoiding human infection.

While most industrialised countries have successfully controlled the disease through strict implementation of control measures such as routine livestock screening, culling of infected herds, and vaccination of healthy animals, brucellosis remains endemic in the many African countries, Mediterranean basin, the Indian subcontinent, the Middle East, Latin America, and north and south of the Sahara. Each year, 500,000 new human cases of brucellosis are reported worldwide, making it the most common bacterial zoonosis. However, because many instances go unnoticed owing to misdiagnosis, lack of monitoring, and insufficient reporting, this startling figure should only be regarded as a rough estimate. The World Health Organization (WHO) estimates that the true incidence is at least one order of magnitude greater. The global disease burden in livestock is significantly higher, with conservative estimates estimating that more than 300 million of the world's 1.4 billion cattle are infected with the pathogen.

Because human brucellosis may affect any organ or physiological system, the infection's presenting symptoms are not pathognomonic, making it easy to mistake the disease with other medical disorders. Over diagnosis of brucellosis, on the other hand, may result in undesirable medication effects and, more crucially, the avoidance of more serious infectious or noninfectious disorders. Antibiotic therapy for brucellar infections is especially difficult, since it needs long-term use of antimicrobial medication combinations that aren't often used for other infectious disorders. The correct diagnosis of brucellosis in humans is therefore critical not only for early and appropriate patient management, but also for public health, as it may reveal exposure to sick animals, consumption of contaminated food (especially dairy products), laboratory safety violations, or the intentional release of brucellae as a biological weapon.

For identifying both acute human Brucella infection and its focused consequences, NAATs (Nucleic acid amplification tests) in any format are more sensitive than traditional cultures and more specific than the serological assays now available. The advantages of molecular tests, such as their unequalled sensitivity, technical ease, efficiency, and safety, make them a potential alternative for traditional culture and serological approaches.

Given the high sensitivity of real-time PCR assays, a positive test may simply indicate the detection of a minuscule bacterial inoculum in frequently vulnerable but healthy subjects, DNA from nonviable organisms, or DNA remnants in circulating mononuclear cells in patients following a successful treatment course. As a result, the data obtained by NAATs should be carefully interpreted, taking into account the clinical and epidemiological context. As a result, there is no convincing evidence to support continuing medical treatment in asymptomatic individuals who have a low bacterial DNA load in their blood after treatment has ended. Although there are currently no well-defined criteria for determining the cure of human brucellosis with certainty, measurement of the bacterial count using Q-RT-PCR has the potential to do so in the future. Similarly, multiplex real-time PCR tests may be used to identify and differentiate Brucella species, replacing the time-consuming and dangerous phenotypic approaches.

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