

Title: Study of Brucellosis among Febrile Malaria-Negative Patients in Different States of Sudan Using LAMP-PCR.

Presenting Author Details:

Presenting Author:

Ms. Maab A. Sharief, Department of Medical Microbiology, Faculty of Medical Laboratory Science, National University, Khartoum, Sudan.

Email: maab_adel@yahoo.com

Abstract:

Background:

Human brucellosis is one of the most important neglected zoonotic diseases worldwide and remains a significant public health problem in livestock-producing countries. In Sudan, where animal husbandry is widespread, the true burden of human brucellosis remains largely unknown because of limited surveillance and diagnostic capacity. The disease is frequently misdiagnosed as malaria or other febrile illnesses due to overlapping clinical manifestations.

Objective:

This study aimed to determine the prevalence of brucellosis among malaria-negative febrile patients from different states of Sudan and to evaluate Loop-Mediated Isothermal Amplification (LAMP-PCR) as a rapid molecular diagnostic tool.

Methods:

A cross-sectional study was conducted using 160 serum samples collected from febrile patients who tested negative for malaria. Samples were obtained from eight Sudanese states: Al Jazeera, Atbara, Khartoum, Port Sudan, Dongola, Kassala, El Fasher, and Gedaref. All specimens were initially screened using the Rose Bengal Plate Test (RBPT). Brucella DNA was extracted using the boiling method and subsequently detected by LAMP-PCR.

Results:

RBPT identified Brucella antibodies in 46 (28.8%) samples, whereas LAMP-PCR detected Brucella DNA in 50 (31.3%) samples, demonstrating a higher detection rate than serology. These findings suggest that LAMP-PCR offers improved sensitivity for the diagnosis of human brucellosis, particularly in patients presenting with acute febrile illness.

Conclusion:

This study represents one of the first multicenter investigations of human brucellosis among malaria-negative febrile patients across different regions of Sudan. The findings highlight that brucellosis should be considered in the differential diagnosis of febrile illnesses in endemic settings. LAMP-PCR provides a rapid, sensitive, accurate, and cost-effective diagnostic method that could substantially improve the diagnosis of brucellosis, particularly in resourcelimited and rural healthcare settings.