



## A Case Report on Brucellosis

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### Abstract

*Brucellosis is a zoonotic disease which is showing a rising trend. This should be an integral differential in every clinician's minds when presented with a case of pyrexia of unknown origin. We report a case of brucellosis with no complications, to reiterate the need for prevention rather than cure and identifying high risk cases demonstrating therapeutic failure. Treatment therapies and duration vary amongst pregnant and individuals with complications however monotherapy regimens are not accepted. Emphasis on patient education and prevention would be the best approach for disease control. Screening contacts of an index case and offering post exposure prophylaxis should be incorporated in to the physician's treatment plan.*

**Keywords:** Zoonotic, Brucellosis, antibiotic resistance, monotherapy, screening.

### Introduction

Brucellosis is a zoonotic infection caused by gram negative coccobacilli transmitted to humans from infected animals.

Four brucella species, *B. melitensis* (isolated mainly from sheep and goats), *B. abortus* (isolated from cattle), *B. suis* (isolated from swine), and *B. canis* (isolated from dogs) cause human diseases.

### Epidemiology

Worldwide, approximately 500,000 cases are reported annually<sup>[1]</sup>, and it is increasing due to the boom in international tourism<sup>[2,3]</sup>. About 80% of people live within close contact to domestic livestock in the Indian subcontinent however the true incidence of human brucellosis is still unknown. Seroprevalence studies in India suggest infection

may range between 0.9% – 18.1%.<sup>[4]</sup> and long-term serological studies indicate baseline seroprevalence of 5% in cattle and 3% in buffalo<sup>[5]</sup>.

### Transmission

Common mechanisms for transmission of brucellosis to humans are<sup>[1,2]</sup> consumption of infected, unpasteurized animal products such as raw milk, soft cheese, butter, ice cream, raw or undercooked meat, contact of skin/mucous membranes with infected animal tissue (placenta or miscarriage products) or infected animal fluids (blood, urine, milk) and inhalation of infected aerosolized particles.

Brucellosis is an occupational disease in shepherds, veterinarians, dairy-industry professionals and lab personnel. Human-to-human transmission from

blood transfusion, tissue transplantation, breastfeeding, congenital transmission, and sexual transmission have also rarely been described<sup>[6-9]</sup>. Brucellae taken up by lymphocytes, enter regional lymph nodes, and seed throughout the reticuloendothelial system. The incubation period ranges from two to four weeks<sup>[1,10]</sup>. Chronic brucellosis refers to persisting clinical manifestations more than one year after the diagnosis of brucellosis is established<sup>[10,11]</sup>.

**Laboratory Findings**

Elevated transaminases, anemia, leukopenia /leukocytosis and thrombocytopenia<sup>[1,12,13,14]</sup>.

In *Brucella* arthritis, synovial fluid white blood cell count is usually  $\leq 15,000$  cells/microL (lymphocyte-predominant)<sup>[15-18]</sup>. The organism can be cultured in synovial fluid<sup>[19,20]</sup>.

Neuro- brucellosis, cerebrospinal fluid shows pleocytosis (10-200 wbc, predominantly mononuclear cells), elevated protein levels, ADA and hypoglycorrhachia<sup>[21,22]</sup>. Organism may be cultured rarely in CSF or antibody/agglutination tests may be used to establish the diagnosis<sup>[22]</sup>.

In Genitourinary involvement, pyuria can be observed and organism can be cultured.<sup>[23,24]</sup> Following treatment, rates of relapse is 5 to 15 percent<sup>[25]</sup>. Relapse occurs within the first six to twelve months following completion of treatment<sup>[26,27]</sup> usually due to inappropriate antibiotic regimen, inadequate duration of therapy, poor compliance, or localized foci of infection<sup>[28]</sup>. Relapse due to antibiotic resistance is quite rare

**Case Report**

A 57-yearold dairy farmer hailing from Kerala, diabetic on oral hypoglycaemic agents, presented with history of fever for the past one month. Fever was intermittent in nature and associated with night sweats. He denied complaints of cough/cold/joint pain or any other localizing symptoms. Patient also complained of weight loss, 10kgs over the past six months.

Examination revealed normal vitals and mild splenomegaly on abdomen examination.

A presumptive diagnosis of Brucellosis was made and patient was initiated on Inj Gentamicin 5mg/kg OD and C.Doxycline 100mg BD for 10 days followed by C.Doxycline 100mg BD + Rifampin 600mg OD for 6 weeks . Definitive diagnosis requires a positive culture or at least a fourfold rise in *Brucella* antibody titre obtained more than two weeks apart<sup>[29,30]</sup>

<b>Hb/TC/Platelets</b>	<b>14.9/4800/1.22</b>
<b>SGOT/SGPT</b>	106/105
<b>Creatinine</b>	0.8
<b>Urine culture</b>	No growth
<b>Blood culture</b>	No growth
<b>Sputum c/s</b>	Normal commensals
<b>Sputum gene expert</b>	Negative
<b>Peripheral smear</b>	No malarial parasites. No blast cells
<b>Lepto, Scrub, Dengue and Salmonella IgM</b>	Negative

<b>Brucella antibodies IgM (Serum EIA)</b>	<b>1.60 (Positive &gt;1.1)</b>
<b>Brucella antibodies IgG (Serum EIA)</b>	0.54 (Negative <0.9)
<b>Serum brucella agglutination</b>	1/1280 (Positive>1/160)
<b>USG abdomen</b>	Mild splenomegaly
<b>2D echo</b>	Normal valves, no vegetations
<b>ECG/Chest X-ray</b>	Normal study

**Discussion**

Relapse, complications and therapeutic failure rates are high and thus deem the necessity for prevention. Measures must be undertaken to boil or pasteurize dairy products, and cook meat thoroughly. Standard infection control precautions such as protective attire and disinfection must be upheld when in contact with infected fluids or tissue. Unprotected sexual contact and breast feeding prior to completion of treatment must be discouraged<sup>[31]</sup>. There are no available vaccines for humans however live attenuated vaccines for domestic livestock is<sup>[32]</sup> and efforts should be taken to cooperate it in to ranchers’ yearly vaccination schedules.

Household members of an index case should be screened and ideally offered repeat titers after 12 weeks<sup>[33]</sup> Personnel with high risk exposure should be offered post exposure prophylaxis<sup>[34,35]</sup>. Periodic follow up and patient education on compliance, symptoms of relapse and sequelae is crucial. Brucellosis continues to be underreported yet a common zoonoses and as prevention is better than cure, strides must be taken in identifying a targeted audience and educating them.

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