

Person-person transmission of *Brucella melitensis* - A rare case report

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ABSTRACT

Brucellosis, also known as “undulant fever” and “Mediterranean fever,” is a zoonosis. It is almost invariably transmitted by direct or indirect contact with infected animal tissues or ingestion of their products. It is endemic in many parts of the world and can affect people of all ages and both the sexes. Person-to-person transmission of brucellosis is usually rare. Here, we report the case of human-to-human transmission of brucellosis melitensis presented as a breast abscess.

Keywords: Breast abscess, Brucellosis, Transmission

Brucellosis, also known as “undulant fever,” “Mediterranean fever,” or “Malta fever,” is a zoonosis. It is an important human disease in many parts of the world, especially in the Mediterranean region, the Middle East, and parts of America and Africa. In endemic areas, the worldwide reported incidence of human brucellosis varies widely from <0.1 to >200 per 1,00,000 population [1]. The true incidence of human brucellosis is unknown in many countries including India. Several reports have indicated the prevalence of brucellosis ranging from 2.3% to 34% among animal health-care workers in India [2-4]. Brucellosis is almost invariably transmitted by direct or indirect contact with infected animal tissues or ingestion of their products. Human-to-human transmission is usually rare. A few cases of *Brucella melitensis* infection in spouses of patients with serologically or culture-proven brucellosis have been reported [5,6].

The disease can be insidious and may present in many atypical forms. In many patients, the symptoms are mild, and therefore, the diagnosis may not be even considered. The long duration and convalescence of human illness make it an important economic as well as medical problem. The application of well-controlled laboratory procedures and their careful interpretation can assist greatly in the diagnosis of brucellosis. Here, we report the case of human-to-human transmission of Brucellosis melitensis presented as a breast abscess.

CASE REPORT

A 32-year-old woman presented with a lump in the right breast region, which was associated with intermittent fever for 4 months. She gave no history of chills or rigors, night sweats, cough, or weight loss. Her husband had been diagnosed with Brucellosis 7 months prior, from Saudi Arabia following the consumption of unpasteurized goat’s milk. She developed the symptoms about

2 months following the husband’s return. She gave no history of travel outside Kerala, consumption of unpasteurized milk, or direct contact with animals or animal tissues.

On general examination, the patient was afebrile. The vitals were in the normal range (pulse rate 72/min and BP - 120/80). Few axillary lymph nodes were palpable. On local examination, a 5 cm × 5 cm lump was palpable in the right breast region. It was non-tender, hard in consistency, and tethered to the skin. There was no hepatosplenomegaly. All other systems were within normal limits.

A chest X-ray was conducted and found normal. Laboratory results showed normal blood picture. A provisional diagnosis of breast abscess was made. Fine-needle aspiration cytology revealed granulomatous mastitis with abscess formation, and she was empirically started on antituberculous treatment; Directly observed treatment, short-course (DOTS) category 1 (isoniazid 600 mg, rifampicin 450 mg, pyrazinamide 1500 mg, and ethambutol 1200 mg). Surgical excision of the mass was done and pus was sent to the microbiology laboratory.

Pus culture was done using standard microbiological methods. Gram stain showed plenty of polymorphs. After overnight incubation, tiny non-lytic colonies were observed on the blood agar. On further incubation, small, gray-translucent and glistening, non-hemolytic colonies appeared on the blood agar (Fig. 1). The Gram stained smear of the colonies showed small Gram-negative coccobacilli. The bacteria were non-motile, catalase and oxidase positive, and non-fermenter of sugars. It was urease positive, and nitrate was reduced to nitrite.

Final identification was done as *B. melitensis* by VITEK-2 automated bacterial identification systems (BioMerieux, Germany) which correlated well with the conventional methods. Blood culture was sterile. DOTS regimen discontinued, and she was given doxycycline 100 mg BD along with rifampicin 450 mg



Figure 1: Brucella growth on blood agar

which was prescribed for 2 months. The patient responded well. She got fully cured and remained asymptomatic thereafter.

DISCUSSION

Human brucellosis is an acute or subacute febrile illness usually marked by an intermittent or remittent fever accompanied by malaise, anorexia and prostration, headache, arthralgia, and generalized aching. Abscess formation is a rare complication and can affect any system. Brucellosis is transmitted to humans mainly through contact with infected animal tissues, ingestion of unpasteurized dairy products, or inhalation of infected aerosols. Human-to-human transmission has been described that included transplacental, breastfeeding, sexual, blood transfusion, and bone marrow transplantation [7-11].

One systematic review shows that the second most common route of human-to-human transmission is sexual. Only 10 cases of sexually transmitted cases have been reported worldwide so far. In these cases, only two reports had microbiology confirmation in semen [12].

In the present case, the patient's husband had been working in Saudi Arabia which is regarded as an endemic area for brucellosis. He acquired brucellosis about 7 months before the present case, following consumption of unpasteurised goat's milk. The patient developed symptoms about 2 months following husbands' return from Saudi Arabia, which would be the expected incubation period if the disease was acquired from him then. In this case it was not possible to prove the sexual transmission as we weren't able to isolate the organism from her spouse. Even though we could not confirm the sexual transmission, circumstantial evidence suggests the human-to-human transmission.

In humans, genitourinary complications such as epididymo-orchitis and prostatitis are seen in cases of brucellosis and seeding of these organs could perhaps play a role in the transmission of disease from person to person. The presence of brucella in both vaginal secretions and semen has been described to support probable sexual transmission [6]. Occasional cases have been

reported in which circumstantial evidence suggests close personal contact as a route of transmission.

The common clinical presentations in cases of human-to-human transmission were acute infection with fever, arthralgia, lethargy, and jaundice. Few patients had pulmonary involvement and sepsis. Some patients showed no symptoms but had the diagnosis confirmed by laboratory tests [12]. The literature search shows that breast abscess is not yet reported as clinical presentation of brucellosis. Hence, our case is an atypical and very rare presentation of brucellosis which was transmitted through personal contact.

CONCLUSION

Our case report points to the fact that human-to-human transmission of brucellosis can occur and that sexual transmission probably plays a role. Further studies to evaluate the rate of brucella seroconversion in spouses of index cases are needed to estimate the true incidence of such an event. In addition, considering the long duration and convalescence of the disease, it would be advisable to create awareness among sexually active patients regarding probable sexual transmission and instruct them to use a barrier method of contraception or abstinence until therapy is completed.

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