

## Brucellosis in a Mother and Her Young Infant: Probable Transmission by Breast Milk

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Brucellosis, although primarily a zoonotic infection, is also a threat for human health. Infection can be transmitted to humans through direct contact with infected animals, products of conception, or animal discharges, and through consumption of potentially infected milk, milk products, or meat.<sup>1</sup> Human-to-human transmission is rare. There have been case reports of transmission via blood transfusion and bone marrow transplantation from infected donors.<sup>2,3</sup> Sexual intercourse is a possible means of transmission.<sup>4</sup> Neonatal infection can be acquired transplacentally or during delivery.<sup>5-9</sup> This report describes a mother with brucellosis who probably transmitted the infection to her 3-month-old baby by breast milk.

### CASE REPORTS

#### Case 1

A 24-year-old woman was admitted with complaints of fever, headache, malaise, anorexia, fatigue, and body aches. Her husband reported that her complaints began suddenly 2 weeks previously and gradually worsened. She was having personality changes. On admission her temperature was 39°C, her pulse was 120 beats per minute, and her respiratory rate was 20 per minute. She had hepatomegaly 5 cm below the right costal margin and splenomegaly 3 cm below the left costal margin.

Total leukocyte count was 6800/mm<sup>3</sup>, hemoglobin was 10 g/dL, hematocrit was 31%, and platelet count was 120,000/mm<sup>3</sup>. Cytomegalovirus, Epstein Barr virus, viral hepatitis, and toxoplasmosis serology were negative, but serum agglutination titer to *Brucella* was 1/640. The patient's blood culture was subsequently reported positive for *Brucella melitensis*. The organism was not isolated from a culture of the breast milk. Her husband reported that she had eaten unpasteurized, unsalted

cheese a month before the onset of symptoms. She was started on trimethoprim-sulfamethoxazole (TMP-SMX, 160 mg TMP, twice a day [b.i.d.], orally) for 6 weeks and gentamicin (80 mg/day, intramuscularly) for the first 5 days.

#### Case 2

When the agglutination test of the mother was learned to be positive, the 3-month-old son of the patient was examined in the clinic. Though his parents reported that the child was doing well, the initial examination of the infant revealed fever (38.4°C), a heart rate of 120 per minute, a respiratory rate of 45 per minute, and hepatomegaly 4 cm below the right costal margin, but no splenomegaly.

The laboratory studies showed a hemoglobin level of 11.5 g/dL, total leukocyte count of 10,200/mm<sup>3</sup>, and an erythrocyte sedimentation rate of 16 mm/h. *Brucella* agglutination titer was 1/640, and blood culture subsequently revealed *B. melitensis*. The infant was started on TMP-SMX (10 mg/kg TMP, b.i.d., orally) for 6 weeks and gentamicin (6 mg/kg/d, intramuscularly) for the first 5 days.

The course of the illness was uneventful and both the mother and the son were well at a follow-up of 1 year.

### DISCUSSION

Human-to-human transmission of brucellosis is rare. Breast milk, as a potential source of infection, is easily overlooked. The authors found only three reports in which spread of brucellosis was ascribed to human milk. In one of them *B. melitensis* could not be isolated from the breast milk; in the other two, culture of the breast milk was not performed.<sup>10-12</sup>

Al-Mafada et al reported an intrauterine infection of *B. melitensis* in which only one of several breast milk samples obtained for culture grew *B. melitensis* after 6 weeks incubation.<sup>13</sup> They attributed the infrequent isolation of the organism to the need for enriched medium, high CO<sub>2</sub> tension, and to the requirement that specimens be incubated for at least 6 to 8 weeks.

The acute infection of the mother is well-documented and the source of infection is thought to be the unpasteurized, unsalted cheese eaten a month before the onset of symptoms. This suggests that transmission to the infant

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did not occur in utero or during delivery. Though it was not possible to isolate the organism from the breast milk, it is likely that this was the source of infection for the infant.

Treatment of brucellosis with TMP-SMX for 6 weeks and gentamicin for the first 5 days was recommended by Lubani et al.<sup>14</sup> No major side effects were recorded and complete recovery was achieved in the two cases presented here. At the end of 1 year of follow-up, no relapse or reinfection was observed.

## CONCLUSION

Breast milk is a probable source of transmission of brucellosis. When the infection is diagnosed in a nursing mother, breast-fed infants should be carefully evaluated. A woman's diet should be restricted throughout gestation and nursing.

## ACKNOWLEDGMENT

Supported by the Research Fund of the University of Istanbul.

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