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## Pediatric Brucellosis: A Case Study.

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### ABSTRACT

Brucellosis is a zoonotic infection, transmitted to humans primarily by consumption of unpasteurized milk and milk products. The disease exists worldwide especially in, Saudi Arabia, Latin America and Indian subcontinents. It is less often thought of in the differential diagnosis of a long standing fever and most of the time child is investigated for enteric fever and tuberculosis. We present a child of acute brucellosis with unusual clinical features, hematological and imaging findings. A 4-year-old boy was brought to the hospital for a sick visit with his mother, who reported a 5-day history of illness including fever of up to 38°C, abdominal pain with loss of appetite, and leg pain. Although the child reported having leg pain, he continued to ambulate under his own power with no apparent difficulty. The mother had been using acetaminophen and ibuprofen to treat his fever and pain. Although the child had been allowed to play with and pet animals, he had not been present during the birth or slaughter of livestock.

**Keywords:** Brucellosis, unpasteurized milk

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## INTRODUCTION [5]

Brucellosis is a zoonotic infection that occurs readily worldwide but is rarely seen in primary care with confirmed cases of only 100 to 200 per year. Risk factors for acquiring brucellosis infection include occupational exposures to body fluids and consumption of unpasteurized dairy products from infected animals, largely from sources . The following case report is of a patient who was diagnosed with brucellosis during an acute febrile illness brucellosis is an endemic zoonotic disease. Although it is believed that children are not commonly involved, a number of reports from endemic areas exhibited a high percentage of pediatric patients (20–30% of affected patients). Clinical manifestations of childhood brucellosis are varied and range from minimal symptoms to extreme morbidity and occasional fatality. Asymptomatic infections are also not uncommon. Several reasons have been considered, but the most prominent of them is the increase in the importation of animals from areas where brucellosis is endemic, especially some African countries. Consumption of raw milk and, to a lesser extent, contact with infected animals or their products are the primary routes of infection. The consumption of fresh, unpasteurized milk from camels is a traditional practice, and people believe that boiling the milk removes nutritional value.

## CASE PRESENTATION

A 4-year-old boy was brought to the hospital for a sick visit with his mother, who reported a 5-day history of illness including fever of up to 38°C, abdominal pain with loss of appetite, and leg pain. Although the child reported having leg pain, he continued to ambulate under his own power with no apparent difficulty. The mother had been using acetaminophen and ibuprofen to treat his fever and pain. The family had recently visited an uncle who lived on a small non commercial farm in a village. Although the child had been allowed to play with and pet animals, he had not been present during the birth or slaughter of livestock. The family returned from the visit 2 days prior to the onset of the patient's illness. The mother did not recall any significant sick contacts. She also denied any recent consumption of unpasteurized dairy products or undercooked meats by the child or the family. The patient was up to date on routine childhood immunizations, including influenza, and had not recently received any vaccines.. He had reached all age-appropriate milestones. The patient lived at home with his parents and two dogs. The mother denied the presence of illicit drugs, alcohol, cigarette smoke, or guns in the home. The family was Catholic and attended mass regularly.

## BRUCELLOSIS –[2]

Brucellosis through a relatively uncommon chronic granulomatous infection .Three types of the bacteria of the genus *Brucella* have been identified as the causative agents for brucellosis and they include *Brucella abortus*, *Brucella melitensis* and *Brucella suis*.

## TRANSMISSION[2]

*Brucella spp.* are small, gram negative, non-motile, non-spore-forming, rod shaped (coccobacilli) bacterial organisms. It is a zoonotic disease caused by the ingestion of raw unpasteurized milk from infected animals or close contact with their secretions common than polyarthrits. Neurobrucellosis is rare in children and it has been reported in only 0.5–1% of children with brucellosis.

## ETIOPATHOGENESIS[3]

*Brucella* species are intercellular gram negative coccobacilli.The classification of *Brucella* species is based on its preferred host namely *B. melitensis* (sheep and goats), *B. abottus* (cattle) ,*B. suis* (pigs), *B. canis* (dogs) .(3) Brucellosis is a zoonosis and transmission to humans can occur through the consumption of infected unpasteurized milk and animal products, through direct contact with infected animal parts such as placenta, by inoculation of skin and mucous membranes, and by inhalation of infected aerolized particles. The vast majority of cases worldwide are attributed to *B. melitensis*.

**CLINICAL MANIFESTATION[1]**

| BOOK PICTURE                  | PATIENT PICTURE            |
|-------------------------------|----------------------------|
| Headache                      | PRESENT                    |
| Myalgia/bone pain             | -                          |
| Anorexia/weight loss          | PRESENT                    |
| sweats                        | PRESENT                    |
| Malodorous perspiration       | -                          |
| Depression, or mood disorders | -                          |
| Fever                         | 102 f                      |
| Arthralgia/arthritis          | Pain in joints and muscles |

**DIAGNOSTIC EVALUATION[1]**

| BOOK PICTURE                              | PATIENT PICTURE  |
|---|--|
| COMPLETE BLOOD COUNT                      | The patient reveals anemic, leukopenia and thrombocytopenia. The liver enzymes are mildly elevated |
| BLOOD CULTURE                             | It is done prior to antibiotic therapy and specimen incubated for 4 weeks.                         |
| BONE MARROW CULTURE                       | It is higher since organism are present in large amounts in the reticuloendothelial systems.       |
| ENZYME LINKED IMMUNOSORBENT ASSAY (ELISA) | Not done   |

**MANAGEMENT[1]**

| MEDICAL MANAGEMENT  | MANAGEMENT FOR MASTER X   |
|---|---|
| <ul style="list-style-type: none"> <li>• REST</li> <li>• ANTIBIOTICS FOR 6 WEEKS</li> </ul> | <p>Doxycycline<br/>5 mg/kg/day in two divided doses (max. 200 mg) (only for children more than 8 year of age)</p> <p>Gentamicin<br/>5–7.5 mg/kg/day IM or IV either as a single dose or three divided doses</p> <p>Rifampicin<br/>20 mg/kg/day in two divided doses (max. 600 mg)</p> <p>Ciprofloxacin 30 mg/kg/day in two divided doses (max. 1.5 g)</p> |

**NURSING INTERVENTIONS[4]**

Hyperthermia related to infectious process as evidenced by elevated body temperature of 102 F  
Determine the precipitating factor for fever. Tepid sponging was given. Towels is placed under each extremity and trunk and replaced as they became warm. Use cooling blanket as available. Provided ample fluid as prescribed. Maintained intake and output chart for the patient. Provided antipyretic drugs like paracetamol/kg/8hourly is given.

- Activity Intolerance related to insufficient physiological and psychological energy to endure or complete required or desired daily activities.

Assess nutritional status. Adequate energy reserves are required for activity. Assess patient's cardiopulmonary status before activity using the following measures: Heart rate Heart rate should not increase more than 20 to 30 beats/min above resting with routine activities. This number will change depending on the intensity of exercise the patient is attempting (e.g., climbing four flights of stairs versus shoveling snow).Need for oxygen with increased activity Portable pulse oximetry can be used to assess for oxygen desaturation. Supplemental oxygen may help compensate for the increased oxygen demands. Determine patient's perception of causes of fatigue or activity intolerance. These may be temporary or permanent, physical or psychological.. Monitor patient's sleep pattern and amount of sleep achieved over past few days. Difficulties sleeping need to be addressed before activity progression can be achieved.

- Imbalanced nutritional status less than the body requirement related to chronic infection.

Obtained nutritional history, 24hrs recall, include family, significant others or caregiver in assessment. Provided nutritional diet to the child. Frequent fluids are given to meet the metabolic needs. Promoting relaxing and non stressful meal time.

### SUMMARY

Master x was responding well to his treatment. He did not develop further complication during his hospital stay.

### CONCLUSION[3]

Rapid diagnosis and treatment of brucellosis is needed to decrease the morbidity in both children and adults. The use of protective clothing and disinfectants when working with livestock, along with pasteurization of milk, is very important for the prevention of transmission to humans (Bosilkovski, 2013a). Screening of family members should be completed with appropriate treatment even if they are asymptomatic (World Health Organization, 2006). Clinicians should have an index of suspicion when encountering febrile patients who have a travel history, an occupational exposure to body fluids or products of abortion of farm animals, or known consumption of unpasteurized dairy products

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