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BRIEF COMMUNICATION

Clinical and laboratory findings of 97 pediatric brucellosis patients in central Turkey

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Brucellosis is a disease transmitted to humans by consumption of unpasteurized animal milk, or through direct contact with infected animals. The aim of this study was to evaluate clinical, laboratory findings of pediatric patients with brucellosis. Data of 97 patients diagnosed with brucellosis between January 2000 and December 2010 were evaluated retrospectively.

Introduction

Brucellosis, a primary disease of domestic animals, is caused by small, fastidious Gram-negative coccobacilli of the genus *Brucella*.[1] The incidence of brucellosis has shown a mild decrease in Turkey according to data from the Ministry of Health; 7703 cases were reported in 2010.[2] Humans are commonly infected through ingestion of raw milk, cheese, or meat, or through direct contact with infected animals, and through inhalation of infectious aerosols.[3]

Clinical symptoms may vary, and include undulant fever, abortion, orchitis, spondylitis, arthritis, endocarditis, encephalitis, and asthenia.[4] The aim of this study was to evaluate the prevalence of acute, subacute, and chronic brucellosis, and also to emphasize clinical and laboratory findings of pediatric patients with brucellosis by comparing with patients reported in the literature.

Methods

In this study, 97 patients diagnosed with brucellosis at Ankara Hematology Oncology Research Hospital between January 2000 and December 2010 were evaluated retrospectively. Data analysis included demographic data, signs and symptoms, physical findings, laboratory findings,

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treatment regimens, and outcome. Patients were classified as having acute brucellosis (<3 months), subacute brucellosis (3–12 months), or chronic brucellosis (>12 months). The study was approved by a local ethical committee.

The blood culture samples were studied with BacTAlert systems (Organon Technica, Durham, NC, USA) for 21 days. The diagnosis of brucellosis was made based on positive Brucella STA test results (titer > 160) in the presence of clinical signs and symptoms suggestive of brucellosis or a 4-fold increase in the serum antibody concentration in a serum sample obtained at 2–3 week intervals and/or isolation of *Brucella spp.* from the blood, bone marrow, or any body fluid or tissue culture. For data analysis, SPSS version 15.0 (SPSS Inc., Chicago, IL, USA) was used. A p value of 0.05 was considered statistically significant.

Results

The characteristics and clinical findings of the 97 patients are reviewed in Table 1.

Consumption of unpasteurized milk or dairy products was significantly more common in patients with a family history of brucellosis (96.9%, whereas patients with no family history of brucellosis had consumption of raw milk in 72.3%, $p = 0.004$). Initiation of symptoms was most common in spring and summer (65%).

By means of clinical findings, serum agglutination titers (SAT) > 1/800 did not affect the presence of fever, weakness, and arthralgia all together. Of patients with SAT < 1/800 43.9% had these three clinical findings, whereas 48.4% of patients with SAT >1/800 had fever, weakness, and arthralgia. The presence of arthralgia was not significantly different in acute and subacute brucellosis cases (72.6% and 87.5%, respectively). Arthralgia was most common in the knee joint (63.9%); arthralgia in the hip was present in 27.8% of our patients and in the sacroiliac joint was encountered in 13.4% of patients, whereas sacroiliitis was present only in one patient. The presence of fever, hepatomegaly, splenomegaly, or arthritis was not significantly different between patients with acute and subacute brucellosis.

Table 1 The characteristics and clinical findings of the patients

Characteristics	Mean
Mean age (y)	10 ± 3.8
Mean duration of symptoms before admission (d)	31.85 ± 44.3
	***n* (%)**
Female	44.3
Living in a rural area	35.1
Consumption of unpasteurized milk or dairy products	80.4
Family history of brucellosis	33
Symptoms	
Fever	78.4
Arthralgia	76.3
Weakness	68
Clinical findings	
Hepatomegaly	30.9
Splenomegaly	20.6
Hepatosplenomegaly	14.4
Arthritis	23.7
Monoarticular	19.6
Oligoarticular	4.1
Clinical diagnosis	
Acute	75.3
Subacute	23.7
Chronic	1
Hospitalization	92.8

Laboratory studies of the patients are summarized in Table 2. Laboratory evaluation, which included the presence of anemia, elevated C-reactive protein (CRP), and sedimentation rates, did not significantly differ between acute and subacute brucellosis patients.

The Rose Bengal test was positive in 67/70 patients (95.7%), SAT was positive in 17/21 patients (80.9%), the agglutination test with 2-mercaptoethanol was positive in 23/27 patients (85.1%), and blood culture was positive in 29/81 patients (35.8%). In patients with SAT > 1/800, 48.4% had blood culture positivity, whereas in patients with SAT < 1/800, 48.3% of them had blood culture positivity. SAT titer did not affect blood culture positivity.

Neurobrucellosis was present in three patients, but cerebrospinal fluid cultures were negative in all. They were diagnosed with agglutination titer positivity in CSF.

When complications of brucellosis were evaluated, 23.7% had arthritis (19.6% monoarticular, 4.1% oligoarticular), 6.2% had pancytopenia, 3% had neurobrucellosis, 2.1% had hepatitis, 1% had osteomyelitis, 1% had pneumonia, and 1% had sacroiliitis.

Treatment regimens were composed of doxycycline and streptomycin in 29.9% of patients, doxycycline and rifampin in 24.7% of cases, and cotrimoxazole and rifampin in 27.8% of patients. The duration of therapy was 6 weeks in 94.9% of patients, 12 weeks in 3.1% of patients, and 24 weeks in 3.1% of patients. Relapse was observed in two patients who were treated with doxycycline and rifampin. No relapse was observed in these patients after 6 weeks of cotrimoxazole and rifampin.

Discussion

Brucellosis is one of the most common zoonoses worldwide and remains endemic in the Mediterranean region, the Middle East, West Asian countries, and also in Turkey.[5,6] Studies from Turkey previously showed that a history of consumption of unpasteurized dairy products was present in 62.4–94.6% of patients with brucellosis.[6–13] Similar to the literature, consumption of unpasteurized dairy products was present in 80.4% of our patients. These results suggest that necessary precautions should still be taken to prevent consumption of such products. In pediatric brucellosis cases, family history has been reported between 15.6% and 47%.[14,15] In accordance with the literature, this rate was 33% in our study. So screening of family members when a patient with brucellosis is diagnosed is very important. In accordance with literature, our cases had