Original Article

Clinical Profile of Brucellosis - A Cross-sectional Study

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Abstract

Background: Human brucellosis is an important but neglected disease in India. It is traditionally described as a disease of protean manifestations.

Aim: The aim of this study was to assess the epidemiological, clinical, and laboratory characteristics of brucellosis.

Materials and Methods: In this cross-sectional study, all the patients admitted with symptoms and signs suggestive of brucellosis were screened serologically for brucellosis by standard agglutination test. A total of 30 cases diagnosed as brucellosis were investigated in terms of the spread of infection, age and sex distribution, clinical and laboratory characteristics and response to different treatment regimens.

Results: Our study revealed a prevalence of 0.61% in adults and 0.1% in children. Fever with drenching sweats remained one of the most important symptoms of brucellosis. Other common symptoms were a generalized weakness, anorexia, body ache, joint pain, and headache. Among the signs, hepatomegaly and splenomegaly were more common, whereas lymphadenopathy was seen in only a few cases. All patients responded to either of the drug regimens, namely, rifampicin plus doxycycline or rifampicin plus streptomycin. Overall, the prognosis was good, and none of the patients expired.

Conclusion: It is concluded that brucellosis is a disease with protean manifestation with no single diagnostic symptom or sign. Brucellosis should be considered as a differential diagnosis in all cases of pyrexia of unknown origin, low backache, arthralgia, sciatica and in all cases of progressive weight loss.

Key words: Brucellosis, Diagnosis, Epidemiology, Prevention, Treatment

INTRODUCTION

Brucellosis is a zoonosis widely distributed around the world. Gram-negative bacteria of the genus *Brucella* cause it and *Brucella melitensis* is the leading cause of brucellosis in humans. It is transmitted directly or indirectly to humans from infected animals predominantly domesticated ruminants and swine. The illness is characterized by fever, sweats, weakness, malaise, and weight loss often without localized findings.

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Brucellosis is also called undulant fever, Malta fever or Mediterranean fever.[1-5]

Human brucellosis is an important but neglected disease in India. Only a few and recent studies have addressed the prevalence and importance of human brucellosis as a human disease problem in India.[6,7]

Human brucellosis is traditionally described as a disease of protean manifestations. Patients are often labeled pyrexia of unknown origin and subjected to various laboratory tests which do not include *Brucella* serology. This is because of the general perception that brucellosis is only seldom encountered in this part of the world.[8-11]

As the disease has a wide variety of clinical presentation, an attempt is made in this study to know the clinical

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presentation, diagnosis, and complications of the disease in D Y Patil School of Medicine.[12-15]

Aims and Objectives

In our study, we aim to determine the epidemiological factors, clinical features and laboratory diagnosis and complications of brucellosis.

Depending on the time duration, the disease is classified into 3 types.
1. Acute brucellosis
2. Subacute brucellosis
3. Chronic brucellosis.

Complications of brucellosis
1. Osteoarticular - most common complication and exists in three distinct forms peripheral arthritis, sacroilitis, and spondylitis.
2. Neurobrucellosis - it is uncommon and diverse and can affect any part of the central or peripheral nervous system.
3. Cardiovascular - endocarditis is the most seen cardiac involvement. Endocarditis and vegetations may develop on damaged valves, prosthetic heart valves, and especially normal valves, there seems to be a high incidence of heart failure.
4. Hepatic complications - hepatitis is common, usually manifestating as transaminasemia. Granulomas can be found.
5. Genitourinary complications - epididymo-orchitis in men and spontaneous abortion in pregnant females.
6. Pulmonary complications - lobar pneumonia and pleural effusions.
7. Ocular complications - diplopia or amaurosis. Nummular keratitis, retinal thrombophlebitis, and uveitis.

The absolute diagnosis of brucellosis requires isolation of the bacterium from blood or tissue samples. Bone marrow cultures are considered the gold standard for the diagnosis of brucellosis since relatively the high concentration of *Brucella* in reticuloendothelial system makes it easier to detect the organism.

The treatment of human brucellosis should involve antibiotics that can penetrate macrophages and can act in the acidic intracellular environment. In 1986, the WHO issued guidelines for the treatment of human brucellosis. The guidelines discuss two regimens, both using doxycycline for a period of 6 weeks, in combination with either streptomycin for 2-3 weeks or rifampicin for 6 weeks.

Alternative drug combinations have been used, including other aminoglycosides (e.g., gentamicin and netilmicin).

Trimethoprim - sulfamethoxazole is a popular compound in many areas, usually used in triple regimens.

MATERIALS AND METHODS

We studied a total of 30 patients of brucellosis and observed for various clinical manifestations of patients with brucellosis presented to us and also tried to look for various laboratory parameters and complications of brucellosis.

Study Design

1-year cross-sectional study.

Selection Criteria

A clinical compatible case presenting with any of the followings
1. Fever of more than 10 days
2. Joint pains
3. Low backache
4. Body ache
5. Generalized weakness.

Other diseases known to produce the symptoms in thes cases were ruled out by all possible investigations.

A diagnosis of brucellosis was made according to the Centers for Disease Control (CDC) criteria.

Case classification: A clinically compatible case that is epidemiologically linked to a confirmed case or that has supportive serology (i.e., *Brucella* agglutination titer of ≥160 in one or more specimens obtained after onset of symptoms).

Patients who are diagnosed to have brucellosis were examined according to the pro forma and other relevant investigations carried out after obtaining informed written consent.

The patient underwent the following investigations:
1. Complete blood count
2. Urine routine
3. Serology (SAT, 2ME, PS for MP, QBC for MP, VDRL, Widal, ASO)
4. Blood culture
5. Chest X-ray (CXR)
6. Other relevant and special investigations were carried out as and when required.

RESULTS

About 576 cases were screened for brucellosis, and 30 cases of brucellosis were diagnosed. Out of these 30, 27 were

from the medical wards, and 3 cases were from pediatric wards.

In the total of 30 patients, more number of cases, i.e., 7 cases each (23.33%) were in the age groups of 41-50 years and 21-30 years. Out of 30 cases, 6 cases (20%) were in the age group 41-50 years, 5 cases (16.6%) in the age group 21-30 years, 3 cases (10%) in the age group 0-10 years, and 2 cases (6.66%) in the age group 51-60 years.

We observed that males are more commonly affected with brucellosis than the females. In our study, 23 (76.66%) patients were males while 7 (23.33%) were females, male to female ratio been 3:1.

In this study, brucellosis was seen more commonly among farmers, shepherds and butchers.

We observed that the rural dwellers, 26 patients (86.66%) were commonly affected than the urban dwellers, 4 patients (13.33%).

In this study, 27 patients had a history of contact with animals, while 3 patients did not have a history of contact with animals.

In this study, history of raw milk consumption was present in 9 patients, whereas 21 patients did not have a history of raw milk consumption.

In this study, acute presentation of brucellosis was seen in 19 patients (63.33%), subacute in 9 patients (30%) and chronic in 2 patients (6.66%).

Laboratory Parameters
This study revealed that total leukocyte count is not much altered in brucellosis.

It was found that erythrocyte sedimentation rate was between 20 and 40 mm at the end of 1st h in 12 patients and more than 40 mm at the end of 1st h in 14 patients. It was <20 mm at the end of 1st h in only 4 patients.

In this study, 21 patients had titers in the range of 1:160-1:640 and titers of 1:1280 and above were seen in 9 patients.

Blood culture was done in all the patients. It was positive in 11 (36.66%) cases and negative in 19 patients (66.66%).

Cerebrospinal fluid cultures which were done in 2 cases of chronic meningitis were negative.

CXR did not show any signs specific for brucellosis in all the 30 patients.

Bone marrow study was conducted in 1 patient, although diagnosis of brucellosis was already established serologically.

Electrocardiography was normal in 29 patients, and only 1 patient who was diagnosed to have aortic regurgitation with infective endocarditis showed evidence of the left ventricular hypertrophy.

Treatment
All patients were treated with a standard regimen of rifampicin plus doxycycline for 6 weeks or streptomycin for 3 weeks plus doxycycline for 6 weeks. 14 patients were treated with rifampicin plus doxycycline.

Complications
Neurobrucellosis and skeletal brucellosis, each of which were seen in 6 patients (20%) were the most common complications.

Among the 6 patients of neurobrucellosis, three had radiculopathy, two had chronic meningitis, and 1 patient had myelopathy secondary to brucellosis. Among the 6 patients of skeletal brucellosis, four had sacroilitis, one had elbow arthritis, and 1 patient had polyarthritis. Brucellar infective endocarditis was seen in 1 patient with rheumatic aortic regurgitation, and 1 patient had epididymo-orchitis.

DISCUSSION

About 576 cases were investigated clinically, serologically, bacteriologically, and with other laboratory investigations to confirm the diagnosis of brucellosis. Out of the 576 cases, 30 cases were diagnosed as brucellosis according to CDC criteria. Of the 30 cases, 27 were in adult patients, and 3 cases were in the pediatric age group.

In this study, more number of cases were seen in the age group of 11-50 years. In this study, males were more commonly affected than females.

Most cases were from rural areas; indicating that brucellosis is stills a disease of the rural population.

We made an attempt of finding the source of infection in our study patients and found that 90% had a history of close contact with animals and 30% of the patients had a history of raw milk consumption.

In this study, acute and subacute type of presentation was more commonly seen than chronic presentation.

In our study, symptoms such as fever, sweating, generalized body ache, arthralgia, headache, and low backache were more commonly observed symptoms.

Less commonly observed symptoms were cough, dyspnea, and vomiting.

In our study, signs such as fever, hepatosplenomegaly, hepatomegaly, and splenomegaly were common observations. Osteoarticular signs were also seen.

Standard agglutination titers were positive in all the patients.

In our study, neurobrucellosis was seen in 20% of the patients. Musculoskeletal involvement is seen as the most frequent complication.

In our study, all the patients responded to both drug regimens, and no relapses were noted. No mortality was noted among the patients which in accordance the other studies.

CONCLUSION

Brucellosis was of acute type in 63%, subacute type in 30%, and chronic in 6.6% of the patients. Total leukocyte counts were not much altered in majority of cases of brucellosis.

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