ASSESSMENT OF 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. The aim of this study was to assess the clinical and laboratory characteristics of brucellosis.

MATERIALS AND METHODS

In this cross-sectional study, all 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 spread of infection, clinical and laboratory characteristics and response to different treatment regimens.

RESULTS

Our study revealed that fever with drenching sweats remained one of the important symptoms of brucellosis. Other common symptoms were generalized weakness, anorexia, body ache, joint pain and headache. Amongst the signs, hepatomegaly and splenomegaly were more common whereas lymphadenopathy was seen in only few cases. All patients responded to either of the drug regimens, namely rifampicin plus doxycycline or rifampicin plus streptomycin. Over all prognosis was good and none of the patients expired.

CONCLUSIONS

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.

KEYWORDS

Brucellosis, splenomegaly, agglutination test, fever.

HOW TO CITE THIS ARTICLE: Badiger RH, Gatnatti VB, Kavatkoppa C, et al. Assessment of clinical profile of brucellosis – a cross-sectional study. J. Evid. Based Med. Healthc. 2018; 5(10), 918-921. DOI: 10.18410/jebmh/2018/187

BACKGROUND

Brucellosis is a zoonosis widely distributed around the world. 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.[1] Brucellosis is also called as undulant fever, Malta fever or Mediterranean fever.

The interest in brucellosis has been increasing because of the growing phenomena of international tourism and migration in addition to the potential use of Brucella as a biological weapon.[2,3]

Human brucellosis is an important but neglected disease in India. Only a few recent studies have addressed the importance of human brucellosis as a human disease problem in India. Human brucellosis is traditionally described as a disease of protean manifestations. Alertness of medical staff and high degree of suspicion is needed to recognize and diagnose the disease. Patients are often labelled 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. As the disease has a wide variety of clinical presentation, an attempt is made in this study to know the clinical presentation, diagnosis and complications of the disease.

Objectives

The objectives of the present study were to know the clinical features and complications of brucellosis.

Financial or Other, Competing Interest: None.
Submission 22-02-2018, Peer Review 24-02-2018,
Acceptance 03-03-2018, Published 05-03-2018.
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DOI: 10.18410/jebmh/2018/187

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 complications of brucellosis. One year cross sectional study conducted during January 2007 to December 2007. Among Patients admitted in KLES Dr. Prabhakar Kore Hospital and MRC, Belgaum and fulfilling the inclusion criteria formed the material for the study.

A sample size of 30 cases was calculated on the basis of 80 percent of the average number of similar cases admitted to KLES Dr. Prabhakar Kore Hospital Belgaum over a period of last three years. A clinically compatible case presenting with any of the following: Fever of more than 10 days, Joint pains, Low backache, Body ache and Generalised weakness were included in the study. Other diseases known to produce the symptoms in the present cases (malaria, UTI, upper respiratory tract infection, tuberculosis, enteric fever, syphilis, etc.) were ruled out by all possible investigations.

Procedure: During the study period; all patients fulfilling the inclusion criteria were subjected to the serological tests and other tests if necessary were carried out to diagnose brucellosis. A diagnosis of brucellosis was made according to the 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 greater than or equal to 160 in one or more specimens obtained after onset of symptoms).

Patients who are diagnosed to have brucellosis were examined according to the performa and other relevant investigations carried out after obtaining informed written consent. The ethical clearance had been obtained from the institutional committee authorized for the study. The patients underwent the following investigations:-Complete blood count, Urine routine, Serology (SAT, 2 ME, PS for MP, QBC for MP, VDRL, Widal, ASLO), Blood culture, Chest X ray.

RESULTS

The present study was conducted in KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum and the findings obtained are tabulated as below. During the study year from January 2007 to December 2007, 576 cases were screened for brucellosis and 30 cases of brucellosis were diagnosed. These 30 cases were studied for the following observations.

Out of these 30 cases, 27 cases were from the medical wards and 3 cases were from paediatric wards. Total number of admissions during this period was 4279 in medical wards and 2784 in paediatric wards. In the present study, 27 patients had history of contact with animals, while 3 patients did not have history of contact with animals. In the present study, history of raw milk consumption was present in 9 patients whereas 23 patients did not have history of raw milk consumption. In the present study, acute presentation of brucellosis was seen in 19 patients (63.33%), sub-acute in nine patients (30%) and chronic in two patients (6.66%).Out of the 30 patients, majority presented with fever- 27 patients (90%). Other common presentations were night sweats in 20 patients(66.66%), arthralgia in 16 patients (53.33%), generalised body ache and loss of appetite in 15 patients(50%), low back ache in 14 patients(46.66%), headache in ten patients(33.33%) and weight loss in five patients(16.66%).Other minor symptoms observed were cough/dyspnea in two patients (6.66%), rashes in two patients (6.66%) and vomiting in one patient (3.33%). The present study revealed that total leukocyte count is not much altered in brucellosis. Majority of the patients had counts in the normal range. Very few patients had counts above or below the normal. In the present study, it was found that ESR was between 20 to 40 mm at the end of first hour in 12 patients and more than 40 mm at the end of first hour in 14 patients. It was less than 20 mm at the end of first hour in only four patients. In the present study, 21 patients had titres in the range of 1:160 to 1:640 and titres of 1:1280 and above were seen in nine patients. An attempt was made in this study to correlate the type of presentation with the standard agglutination titres. When we did a Pearson's correlation for the type of presentation and titres it showed negative correlation (r= - 0.307) which means that titres were lower in chronic brucellosis than in acute brucellosis but this difference is not statistically significant (p=0.099). Chi square test was carried out to see if there is any significant difference of titres depending upon the type of presentation. The outcome revealed that there was no statistically significant difference (p=0.636) across the groups. Blood culture was done in all the patients. It was positive in 11(36.66%) cases and negative in 19 patients (66.66%).

Culture from other tissues /fluids: Bone marrow cultures were not done in any of the patients. CSF cultures which were done in two cases of chronic meningitis were negative. Chest X Ray: Chest x ray did not show any signs specific for brucellosis in all the thirty patients. The X ray revealed cardiomegaly in one patient who had presented with infective endocarditis secondary to aortic regurgitation. Chest X ray was also normal in the only patient who had presented with cough. Bone Marrow: Bone marrow study was done in one patient, although diagnosis of brucellosis was already established serologically. The bone marrow study showed a non-specific granulomatous lesion. Liver Biopsy: Similarly another patient diagnosed to have acute brucellosis on serology was subjected to liver biopsy and was found to have non caseating granuloma with Kupffer cell hyperplasia. ECG: ECG was done in all the 30 patients. It was normal in 29 patients and only one patient, who was diagnosed to have aortic regurgitation with infective endocarditis showed evidence of left ventricular hypertrophy.

Variable		No.	%
H/o contact with animals	Yes	27	90
	No	03	10
H/o raw milk consumption	Yes	9	30
	No	21	70
Type of presentation	Acute (< 2 months)	19	63.33
	Sub-acute (2-12 months)	9	30
	Chronic (> 12 months)	2	6.66
Complications	Neurobrucellosis	6	20

	Skeletal brucellosis	6	20
	Infective endocarditis	1	3.33
	Epididymo orchitis	1	3.33

Table 1. Clinical Presentation of Brucellosis

Titre/	1: 160	1: 320	1: 640	1: 1280	1: 2560	1: 5120	1: 10240	P
Acute	2	5	5	3	2	1	1	0.636
Sub-acute	4	0	3	2	0	0	0	
Chronic	1	0	1	0	0	0	0	

Table 2. Titres According to the Type of Illness

DISCUSSION

576 cases of suspected brucellosis admitted in KLES Dr. Prabhakar Kore Hospital and Medical Research Centre from January 2007 to December 2007 were investigated clinically, serologically, bacteriologically and with other laboratory investigations to confirm the diagnosis of brucellosis. We made an attempt of finding the source of infection in our study patients and found that 90 % of the patients had history of close contact with animals and 30% of the patients had history of raw milk consumption. In the present study, acute and sub-acute type of presentation was more commonly seen than chronic presentation; which is in accordance with the Savas et al[4] study. In our study, symptoms like fever, sweating, generalized body ache, arthralgia, headache and low back ache were more commonly observed symptoms. Less commonly observed symptoms were cough, dyspnea and vomiting. This is almost similar to the study carried out by Savas et al[4] and Mantur et al.[5] Skin manifestations were more in our patients as compared to Mantur et al[5] and Savas et al.[4] Patients presenting with eye manifestations and psychotic manifestations were not seen in this study which was seen by Buchanan et al and Lulu et al. However the incidence of the same in their study, was also much less.

Standard agglutination titres were positive in all the patients. However the titres did not correlate with the type of presentation. This could probably be due to the different age, taking prior antibiotics and differing immune status of the patients. The yield of blood cultures in brucellosis ranges from 35% to 80.3%.[6,7] We observed that blood cultures were positive in only 36.66% of our patients. This again could be due to fact that patients had received antibiotics effective against Brucella organism prior to admission.

In our study neurobrucellosis was seen in 20% of the patients. Other studies have detected neurological involvement in 2% to 5% of the patients with brucellosis.[8] Meningitis is the most frequent CNS complication.[9] Musculoskeletal involvement is seen as the most frequent complication of brucellosis; however, its prevalence may vary from 0% to 70%.[10] Skeletal brucellosis was seen in 20% of the patients in the present study. Endocarditis occurs in less than 2% of patients worldwide; however, in endemic areas, it may complicate 7%-10% of patients.[11] In a previous study of 530 patients with brucellosis, only 6 (1.5%) had endocarditis. In the present study endocarditis was present in one patient (3.33%).The incidence of epididymo-orchitis in brucellosis is estimated at 2%-20%.[12] Khan[13] investigated 100 patients with brucellosis in Saudi Arabia and found testicular involvement in 6%. In the present study, epididymoorchitis occurred in 3.33% of all patients with brucellosis.

CONCLUSION

Brucellosis was of acute type in 63%, sub-acute in 30% and chronic in 6.6% of the patients. Fever with drenching sweats remained one of the cardinal symptom of brucellosis. Other common symptoms were generalized weakness, anorexia, body ache, joint pain and headache. Amongst the signs, hepatomegaly and splenomegaly were more common whereas lymphadenopathy was seen in only few cases. Total leucocyte counts were not much altered in majority of cases of brucellosis. Brucella SAT was positive in all 30 cases, and there was no significant difference in SAT titres between acute, sub-acute and chronic brucellosis. Blood culture was positive in only 36.66% of the cases. Hence, it was not fruitful in the study. All patients responded to either rifampicin plus doxycycline or rifampicin plus streptomycin regimen. Over all prognosis was good and none of the patients expired.

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