Original Article

Hematologic Manifestations of Brucellosis

Behnaz F MD[1], Mohammadzadeh M MD[1], Mohammadi moghaddam M MD[2]

1- Assistant professor of infectious diseases department, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran
2- Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran

Received: 5 March 2011
Accepted: 24 July 2011

Abstract

Background

Brucella mellitensis, the most invasive strain of brucella, is the predominant Strain of genus brucella in Iran. It causes variety of hematological abnormalities some of which are frequent and causes difficulties in diagnosis.

Objective

To find hematological abnormalities of brucellosis in hospitalized patients in an endemic area.

Materials and Methods

A retrospective review of patients' medical records who were admitted to four university and general hospitals during 8 years was done. Age, sex, clinical findings, laboratory tests including CBC, platelet count, Erythrocytic Sedimentation Rate (ESR), C-Reactive Protein, wright test were assessed. Confirmation of brucellosis was made by wright agglutination test at a titer; ≥1/160. Data were analyzed by Spss16 and Pvalue <0.05 was taken as significant for differences.

Results

Out of 238patients diagnosed as brucellosis, hematologic evaluation had been performed for 208patients.Anemia was detected in (55/119)46%of male and (35/89) 39.3% of female patients (Pvaule0.383). Leukopenia (WBC < 4300/mm^3) was present in (18/208) 8.5%, thrombocytopenia (Platelet < 150.000/ mm^3) in (24/200) 12% and pancytopenia in (3/200) 1.5%of patients.

Conclusion

Brucellosis should be considered in differential diagnosis of any patient with disturbances of hematologic findings in endemic areas.

Key Words

Anemia, Leukopenia, Thrombocytopenia, Brucellosis

Corresponding Author:
Fatemah Behnaz, Assistant professor of infectious diseases department, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran, Infectious disease ward, Shahid sadoughi hospital, Ebne Sina Avenue, Yazd, Iran email: Fatemah.behnaz@yahoo.com

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Introduction

Brucellosis is a Common zoonosis in some developing Countries including Iran. The predominant Strain of brucella in Iran is B.mellitensis(1). Brucella mellitensis is the most invasive strain and Causes the most severe disease. The disease causes variety of hematological abnormalities some of which have been frequently associated with acute brucellosis such as anemia and leucopenia (2), but thrombocytopenia and pancytopenia have been less frequent(3). In Some endemic areas for brucellosis, few other infectious diseases are Prevalent Presenting with similar hematological manifestations such as leishmaniasis, tuberculosis, typhoid fever and infectious mononucleosis (2). Crimean Congo Hemorrhagic Fever, an occupationally related infection in some endemic areas for brucellosis, during initial few days of its presentation can mimic brucellosis complicated by pancytopenia ,causing problems in diagnosis in endemic areas(4). In a review of medical records of brucellosis cases admitted to university and general hospitals of an endemic area during 2003-2010, their hematological findings were analyzed.

Materials and Methods

A retrospective review of patients' medical records who were admitted to four university and general hospitals during 8 years was done.

Variables assessed were demographic (age, sex), clinical signs and symptoms laboratory tests including CBC, platelet count, Erythrocyte Sedimentation Rate (ESR), C-Reactive Protein(CRP), Wright Test (standard tube agglutination), Coomb's Wright, dilutional Wright test, Elisa for antibrucella IgG and IgM (in the case standard tube agglutination was negative). Complications were also looked for. Confirmation of brucellosis was made by wright at titer;≥1/160.

Results

Among 238 Brucellosisdocuments, hematological evaluation was studied for 208 (87.4%) of them who were enrolled into study. Platelet count had been reported for 200 patients(84.3%).

Male to female ratio was 1.34/1 including 119 male and 89 female patients. Mean and Median of their age was 38.5± 21 and 35 years respectively (range 1.5years to 82 years). Their clinical findings were fever (78%), Sweating (56%) chills (45%), generalized weakness (42%), Low back pain (41.6%), splenomegally (31.7%), hepatomegally 24%, musculoskeletal pain 32.5%, weight loss 30%, headache 27.3%, arthralgia 26.5%, lymphadenopathy 8.4% and Cough 7.6%.

Anemia was detected in55/119 (46%) of male and 35/89 (39.3%) of female patients (Pvaule0.383). Mean of hemoglobin in male patients was 13.1 ± 1.99 g/dl while mean12.33 ± 1.3, g/dl for female (P value= 0.002).

Leucopenia (WBC < 4300/mm^3) was present in 18/208 (8.5%) of patients.

Leukocytosis (WBC > 10800/mm^3) in 30/208 (14.2%) of patients. Thrombocytopenia (Platelet < 150.000/ mm3) was detected in 24/200 patients (12%).Ten patients (5%) had thrombocytosis (Platelet > 450.000/ mm3).

Patients records revealed that ESR was done for 189 (79.4%) as follows:44patients(23.2%)had ESR <20mm/1st hour,126 patients(72%) 20-99 mm/1st and only19 cases(4.8%) of them had ESR≥100/1st hr. CRP was Positive in 164 (77%). Three patients (1.5%) had pancytopenia, one with petechiae and purpura and another one presented with melena, initially treated as Crimean Congo hemorrhagic fever. Biopsy done on his bone marrow revealed granuloma and Wright agglutination test was positive at a titer; 1/ 640.

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Discussion

Brucellosis is a Common disease in many developing Countries especially in Middle East including Iran. Clinical and laboratory Findings of brucellosis are heterogeneous and non specific, so it should be considered in differential diagnoses of any patient with hematological abnormalities in endemic areas (5).

The present study revealed that 42% of patients had anemia. Due to WHO definition of anemia it was not statistically different between sexes, Although hemoglobin Concentration was significantly lower in women. Anemia aggravates fatigue which is frequently seen in brucellosis. Anemia has been reported in 15.1% to 83% of Patients in different studies on brucellosis patients (2, 5-11). This wide range of anemia may be partly due to different definition criteria.

Normal leukocyte count has been reported in many studies (8, 9) and Leukopenia in 3% to 68% of patients (2, 5, 6, 9, 13). Differences is partly due to different definitions of leukopenia (<4000/mm3to <4500/mm3). In the present study 8.5% of patients had leukopenia which is in the range of other studies(3%in a northern Iranian study to 28.7% in a Spanish study), although a Greek study reported it as an extremely rare event(3,14,15) . Thrombocytopenia observed in 12% of our patients, had been reported in 3.4% to 33% of patients in other studies (2, 5, 6).

Pancytopenia observed in 3 (1.5%) of patients in the present study had been reported in 3 to 21% of patients reported in previous studies (2, 16).

Abnormal ESR defined as >20mm/1st hr observed in145 (76.8%) of our patients has been reported in many studies in the range of61% -65.9 %(2, 5, 10, 17).However it has been reported in 22.2% of patients in a study in northern Iran (6).

Positive CRP was seen in 59.1%-64.7% of patients in tow studies in Iran (6, 10) and in 78.9%of patients in a study in Balkan (5).

As a conclusion, since brucellosis is endemic in our area it may be concluded that this disease should be considered in differential diagnosis of any patient with variety of disturbances of hematologic findings in endemic areas.

Acknowledgment

We appreciate contribution of shahid Sadoughi hospital,shahid Rahnemoun hospital, Shohadaye Kargar hospital and seyedolshohada hospital in data collection.

Conflict Of Interest

None

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