Case Reports

Brucellosis associated with thrombocytopenia

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ABSTRACT

Brucellosis is a zoonotic disease and is endemic in Saudi Arabia. Many hematological complications have been reported. We report a case of selective thrombocytopenia in an expatriate from Bangladesh. Patient responded well to antibrucella and steroid treatment.

Keywords: Brucellosis, Brucella, Thrombocytopenia.

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Thrombocytopenia is a subnormal number of platelets in circulating blood. It may result from deficient production, accelerated destruction and abnormal pooling of platelets within the body. Accelerated platelet destruction is the most common cause of thrombocytopenia.[1] When the rate of platelet destruction exceeds the rate of platelet production thrombocytopenia results. Brucella can rarely cause selective thrombocytopenia by primary or immunological mechanism of platelet destruction.[2] We have discussed a case of brucellosis with thrombocytopenia and its management in a person from Bangladesh. Though there have been reports of sporadic cases of brucellosis from the Indian subcontinent, essentially it is not endemic in these regions.

Case Report. An Asian expatriate male farmer aged 26 years hailing from Bangladesh was admitted through Emergency Room for complaints of bleeding from gums of 2 days duration and pain in knee joints. He had been living in the Kingdom for the past one and a half years. There was no previous history of similar complaints, no history of skin rash or drug intake in recent days. He was febrile with temperature of 39 degrees celsius. On examination, the knee joints were not swollen and joint movements were painful. There was no lymphadenopathy or liver enlargement. Spleen was palpable. There was no purpuric or echymotic areas seen on admission. Purpuric spots developed later in the ward. Other systemic examination was unremarkable. On admission Hemoglobin was 12.4 gm/dl,WBC was 5700/mm^3, Platelets 12000/mm^3. However Prothrombin time and partial thromboplastin time were normal. Bleeding time was prolonged.

Other laboratory investigations were as follows: RBC was present in urine, stool was positive for occult blood and liver function tests were normal. Brucella antibody titer as estimated by standard agglutination test was over 1:1280. Bleeding time was more than 12 minutes. LE latex agglutination test was negative. Protein electrophoresis showed hypergammaglobulinemia. Bone marrow aspiration showed a normal picture with increased megakaryocytes (Figure 1). Urine and blood culture did not reveal any growth. Ultrasound abdomen revealed moderate splenomegaly. All relevant blood chemistry results were within normal limits.

Antibrucella treatment was started with Doxycycline and Rifampicin. High dose of Prednisolone 60 mg/day was started. On noting that

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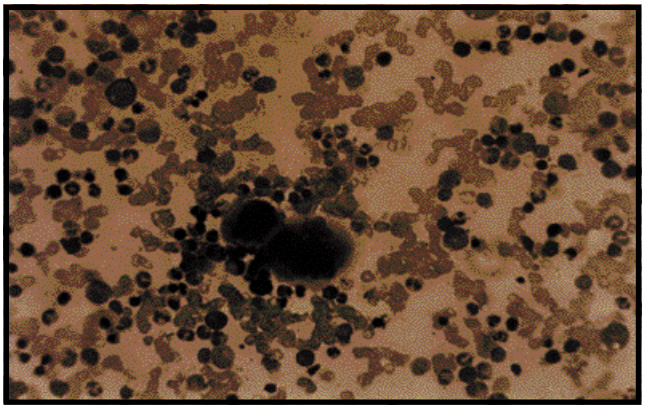

Figure 1 - Photomicrograph of bone marrow smear from the patient showing normal cellular picture.

the patient had severe thrombocytopenia he was transfused with two units of platelets soon after admission. However a repeat platelet count showed only 10,000/mm^3. The next day he was transfused with another three units of platelets. But the platelet count remained the same implying platelet destruction in circulation. Five days following admission his hemoglobin came down to 8.3 gm/dl. He was transfused with two units of packed RBC. Immunoglobulin injection was given in a dose of 400 mg/kg per day for 5 days. Prednisolone was continued for 10 days. Patient started improving with this treatment as evidenced by improved platelet count and hemoglobin. After 10 days prednisolone dosage was tapered off. He was discharged after a stay of 20 days.

Patient attended follow-up clinic after one month and was found to be completely asymptomatic. The laboratory investigations at this time showed platelets 330,000/mm^3 and WBC 10,300/mm^3 with all other biochemistry parameters within normal limits.

Discussion. Thrombocytopenia is a rare complication of brucellosis. Brucella can produce many hematological complications.[3-9] According to one study by al Eissa et al, thrombocytopenia accounts for 5% of all hematological complications in brucellosis.[8] Brucellosis is usually diagnosed by seroconversion from negative to positive or a rising agglutinin titer in the serum. An agglutination titer of over 1:160 in a symptomatic patient is also considered diagnostic in endemic areas. Brucella culture is the most definitive method of diagnosis of brucellosis, but culture is rarely positive because of the fastidious nature of the organism and also needs prolonged incubation.

Thrombocytopenia may be because of endotoxin release by the organism which may give rise to disseminated intravascular coagulation. Endotoxin initiates coagulation by activating Hageman factor of intrinsic system and by causing the release of a monocyte factor which triggers the extrinsic system. The monocytes expose a tissue factor which is glycoprotein in nature, on their membrane following direct stimulation by bacterial products. Endotoxin can also cause disturbances in blood cells including platelets giving rise to thrombocytopenia. This action combined with anticoagulant action of fibrin degradation products accentuates bleeding tendency caused by disseminated intravascular coagulation (DIC).[10] Anyhow in this patient the coagulation profiles were within normal limits.

In one study platelet associated IgG level was increased by 46% in patients with gram negative septicemia, suggesting an immunological mechanism.[11] This may explain hypergamma-globulinemia leading to accelerated platelet destruction in our case, and to a certain extent splenomegaly, since spleen is the site of destruction of platelets. However brucellosis by itself can cause splenomegaly without thrombocytopenia. In this case the combined factors of brucellosis and thrombocytopenia may have contributed to splenomegaly.

Patients with thrombocytopenia due to brucellosis respond well to anti brucella and steroid treatment. A combination of Doxycycline and Gentamicin[12] or Rifampicin with Tetracycline or Doxycycline for at least 6 weeks should be given. In view of immunological origin of thrombocytopenia, this case was treated with high dose of corticosteroids and intravenous immunoglobulin injections. Steroid and imunoglobulin therapy have been described to be useful in cases of thrombocytopenia.[13] At times immunoglobulin therapy is recommended as the treatment of choice with a five day course.

The mode of action of immunoglobin in the treatment of thrombocytopenia is not completely understood.[13] However, it has been suggested that mononuclear-macrophage system - FC - receptor blockade and immune modulation with increase in T-suppressor cells, reversal of the helper/suppressor ratio and reduced B-cell function are likely to be major factors in the mechanism.[14] Splenectomy as a treatment in refractory thrombocytopenia has been reported with various degrees of success but is controversial and may be harmful in areas where tuberculosis and malaria are endemic.[15]

During the past 10 years, at this hospital this was the first case of brucellosis associated with symptomatic thrombocytopenia.

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