Immune Hemolytic Anemia in Association with Visceral Leishmaniasis

Summary
Despite the fact that anemia is one of the most striking clinical features of visceral leishmaniasis (kala-azar), the factors involved in the pathogenesis are not fully understood. The cause of anemia seen in these patients is often multifactorial including sequestration and destruction of the erythrocytes in the enlarged spleen, hemophagocytosis and alterations in erythrocyte membrane permeability. Anemia due to immune hemolysis is rarely seen in patients with kala-azar. We present here 4 year-old girl diagnosed as kala-azar associated with autoimmune hemolytic anemia. No signs of hemolysis had remained after kala-azar was successfully treated with meglumine antimonate. (J Pediatr Inf 2007; 1: 36-8)

Key words: Immune hemolytic anemia, kala-azar

Introduction
Visceral leishmaniasis (kala-azar), an infection caused by the protozoan parasites called Leishmania spp, is a potentially fatal parasitic disease and a public health problem in most countries bordering the Mediterranean basin, including Turkey. Visceral leishmaniasis may mimic or lead to several types of hematological disorders including pancytopenia, hemolysis, megaloblastic findings, fibrinolysis, and also rarely, it may cause autoimmune hemolytic anemia and cold agglutinin syndrome (1). Anemia is almost always present and may be severe. It is usually normocytic and normochromic. It appears to be due to a combination factors including hemolysis, marrow replacement with leishmania infected macrophages, hemorrha-
of 5.8 g/dL, white blood cell count 2800/mm³, platelet count 39,000/mm³; elevated liver function tests with aspartate aminotransferase 518 IU/L, alanine aminotransferase 247 IU/L, gamma glutamyltransferase 51 mg/dL, elevated bilirubin levels, C-reactive protein 48 mg/dL, and hypergammaglobulinemia. Signs of hemolysis were appeared in peripheral blood smear and reticulocyte count was %6 as haptoglobin decreased to 2 mg/dL, direct Coombs reaction was 2 (+), free hemoglobin in plasma and urine were 2 (+) at the onset of admission. The warm and cold reactive antibodies could not be detected.

Serologic studies have shown no evidence of brucellosis, toxoplasmosis, Epstein-Barr virus, cytomegalovirus, hepatitis A and B viruses and human immunodeficiency virus infection. Extracellular or intracellular leishmania amastigotes were not seen and also no evidence of malignancy or dysplasia appeared in bone marrow aspiration. Kala-azar dipstick (rk-39) was positive.

After her active hemolysis, hematocrit fell to level of 15% and because of cardiac insufficiency, erythrocyte transfusion was done. Specific treatment of meglumine antimonate (Glucantime®) at a dose of 20 mg/kg body weight was started. At the 10th day of treatment of meglumine antimonate, WBC and platelet count increased to 6200/mm³ and 265,000/mm³ also the signs of hemolysis were disappeared and direct Coombs test became negative.

Discussion

Kala-azar is characterized by fever, hepatosplenomegaly, weight loss, diarrhea, and severe hematologic alterations. Anemia is the constant feature in this disorder. The cause of the anemia is multifactorial; sequestration and destruction of the red blood cells in the enlarged spleen, immune mechanism, increased plasma volume due to splenomegaly, dyserythropoietic changes of bone marrow, concomitant infections, malnutrition leading to folic acid, vitamin B12, or iron deficiencies, and alterations in erythrocyte membrane permeability have been implicated (1). Hemolytic anemia in kala-azar has been reported in literature rarely (5,6). In our case, it has found that because intravascular hemolysis findings were positive it was accepted as hemolysis secondary to kala-azar infection and the hemolysis was not expected with erythrocyte with non-specific adsorbed immune complexes secondary to polyclonal hypergammaglobulinemia mostly (1). However, cold and mostly warm antibodies have detected in some studies (1,10). The number and type of immunoglobulin molecules may affect hemolysis, despite the correct relation is still unclear (1). In our case, it has found that because intravascular hemolysis findings were positive it was accepted as hemolysis secondary to kala-azar infection and the hemolysis was not expected with erythrocyte with non-specific adsorbed immune complexes secondary to polyclonal hypergammaglobulinemia.

Anemia is seen because of multiple mechanisms in visceral leishmaniasis. Although immunoglobulins on erythrocytes are not specific in most cases, in presence of significant hemolysis, physician must consider that it is different from previous conditions and some other therapeutic options must be considered when the treatment of visceral leishmaniasis is not sufficient.

As a conclusion in case of anemia in patients with kala-azar, increased destruction must be taken into consideration and keep in mind for the appropriate treatment management.

References


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