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Hematology

APLASTIC CRISIS IN HEMOLYTIC ANEMIA SECONDARY TO DENGUE FEVER

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ABSTRACT Dengue fever has rarely been reported as an etiology for aplastic anemia. A 26-year-old male was admitted with fever, myalgia and jaundice. Dengue virus NS1AG antibodies were positive. He recovered completely, but her thrombocytopenia persisted. A bone marrow aspirate and biopsy showed hypercellular marrow which recovered completely after the aplastic crisis.He was treated conservatively and blood transfusion was done. Dengue-virus induced aplastic anemia is a rare entity, but it must be identified early for better outcome.

KEYWORDS : Aplastic anemia, Dengue fever, Hemolytic anemia, Aplastic crisis.

INTRODUCTION :

Aplastic anemia is defined as peripheral pancytopenia with hypocellular bone marrow. Most cases of the disease can be pathophysiologically characterized as T-cell-mediated organ-specific destruction of bone marrow hematopoietic cells, with a strong association between AA and antigen HLA–DR2. The etiology in secondary AA is represented by exposure to radiation, drugs and chemicals, viruses (Epstein Barr, hepatitis virus, parvovirus, human immunodeficiency virus), immune diseases (eosinophilic fasciitis, thymoma), paroxysmal nocturnal hemoglobinuria (PNH) and the rest of cases are idiopathic AA. The pathophysiologic pathways leading to AA are damage to DNA inducing apoptosis by cytotoxic chemotherapy, irradiation, chemical or physical agents; marrow failure caused by medical drugs (chloramphenicol, antiepileptics, gold salts, antithyroid drugs), complex immune reactions leading to bone marrow failure induced by viruses. The pathogenic mechanism of idiopathic AA is still unknown. The clinical picture includes an anemia-related syndrome, fever and hemorrhage. In tropical areas the differential diagnosis should include infectious disease, such as bacterial sepsis, leptospirosis, viral hemorrhagic fevers and visceral leishmaniasis. AA is a rare complication of dengue hemorrhagic fever, and its pathophysiology isstill poorly understood. We report a rare case of AA induced by dengue virus infection.

CASE PRESENTATION:

A 26-year-old male presented with complaints of fever, myalgia and jaundice.He had repeated episodes of jaundice and one episode of blood transfusion and no history of drug abuse and contact with possible toxic agents. Laboratory tests at admission showed a hemoglobin of 3.7g/dL with a hematocrit of 11.4; a white cell count of 1000cells/mm (lymphocyte 68% and polymorphs were 25%), platelets were 30000cells/mm. The hemoglobin showed a rising trend and reached a maximum of 11g/dL with a hematocrit of 36.8. Dengue serology NS1AG is positive, and IgM and IgG were negative. He was managed with fluid therapy and platelet and blood transfusion. He recovered from fever and stayed well. So Investigations showed pancytopenia with microcytic hypochromic and anisocytopoikilocytosis and tear drop cells on peripheral smear. There was no family history of similar complaints. On physical examination he was pale, icterus present and splenomegaly. A repeated complete blood count showed persistent pancytopenia and hypoplastic anemia was considered. Bone marrow aspiration showed hypercellularity, an increased number of fat cells. Bone marrow biopsy revealed erythroid hyperplasia which showed that aplastic crisis have resolved. Serology for viral hepatitis A, B, C, HIV were negative.A possible diagnosis of dengue virus-induced AA was made. He received packed cell and platelet transfusions.

DISCUSSION :

Only a few cases are reported of AA and aplastic crisis due to dengue fever. Albuquerque et al4 and Pallota et al5 have described similar cases from Latin America. In our case dengue was confirmed by serology, which was positive for NS1AG antibodies. The patient was admitted with fever and jaundice and had recovery, but had pancytopenia. Other possible causes like megaloblastic anemia and myelodysplasia were excluded on bone marrow examination. After exclusion of other possible etiologies for AA, the final diagnosis was dengue virus-induced AA in our case. Dengue fever virus is endemic and causes hemorrhagic fever in India. In year 2010 , a total of 27 196 cases and 104 deaths were reported in India. Delhi had the highest, 6240 cases with 8 deaths. Dengue virus and other arboviruses can be associated with bone marrow failure.It is known that dengue subtype DEN-4 can reproduce in progenitor cells from the bone marrow. Neutropenia and thrombocytopenia are common in dengue infection, and the bone marrow is markedly hypocellular with abnormal megakaryopoesis. The seventh day after viral infection an abnormal vacuolization of lymphocytes appears. Reticulocutopenia, lymphocytopenia, thrombocytopenia and granulocytopenia appear in this order. The association between viral infection and different forms of bone marrow failure can be caused by viral induced inhibition of multiplication of hematopoietic cells. In the acute phase of infection and viremia, viral replication in the bone marrow leads to pancytopenia. The pathophysiology of dengue-induced AA is poorly understood. It is believed that cellular destruction is a direct consequence of both peripheral destruction induced by immune complexes and direct viral injury to born marrow. Aplastic crisis refers to profound cessation of erythroid activity in patients with chronic hemolytic anemia. It is associated with fall of hematocrit.It occurs during and immediately after acute illness and is usually transient and self limited. Caused by infection with parvo virus B19A which causes 5th disease in children and arthropathy in adults.In immuno compromised it causes pure redcell aplasia . Other causes include drugs, irradiation, non hepatitis A,B,C, Ebsteinbarr virus, Cytomegalo virus, HIV, Rubella and many other viruses.Management includes close monitoring of hematocrit and reticulocyte count. If anemia becomes symptomatic transfusion is needed. Most crises resolve spontaneously with in 1 – 2 weeks. In this case the aplastic crisis is precipitated by dengue virus.But by the time bone marrow is done the aplastic crisis is resolved in this case.

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