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DENGUE FEVER WITH RARE COMPLICATION: APLASTIC ANEMIA

Pediatrics

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ABSTRACT

Dengue fever is very common in India but sometimes it can rarely be underlying etiologic for aplastic anemia. A 9 years old presented with fever , pain in abdomen and bleeding manifestations, on investigation child had pancytopenia with serology for Dengue(IgM, IgG, NS-1) positive. On bone marrow examination child had bone marrow hypoplasia. Child was started on corticosteroids and Cyclosporine. On follow up, child had improved cell count. So, Dengue virus induced aplastic anemia is a rare entity but if diagnosed and treated early, can have better outcome.

KEYWORDS

Dengue fever, Aplastic anemia.

INTRODUCTION:

Dengue is highly endemic infectious disease of tropical countries, which is caused by any of four serotypes of dengue virus. Severity of disease ranges from mild fever to complicated presentation as dengue hemorrhagic fever and shock syndrome. Severe dengue is deadly complication due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding or organ impairment.(1)

Occasionally, Dengue virus can infect human hematopoietic cells and alter their proliferative capacity and can induce aplastic anemia through direct bone marrow invasion leading to irreversible severe aplastic anemia, which, if identified early, respond to course of immunosuppressive medications.(2) Our case report focuses on this rare complication of Dengue fever in the form of aplastic anemia.

CASE REPORT:

A 9 years old male child was admitted with complaints of fever since six days, pain in abdomen, vomiting, red colored urine, and epistaxis since one day. Child had no previous history of any significant illness or any history of blood transfusion. On examination, child had tachycardia (Heart rate 110/minute), pallor, ecchymotic patches over trunk and limbs and submucosal bleed in oral cavity. During the hospital stay, child had episodes of hematemesis and gum bleeding. There was no hepatosplenomegaly or free fluid in abdomen.

Laboratory investigations revealed Anemia (Hb- 6.9 g/dl), Leukopenia (WBC 1600), severe thrombocytopenia (Platelet 5000/cmm) with peripheral smear showing microcytic hypochromic RBCs, mild anisopoikilocytosis, pencil and tear drop cells with marked leucopenia and neutropenia, few atypical lymphocytes. Reticulocyte count was 0.5%, PT- INR and APTT were normal. Liver and renal function tests and LDH levels were normal. Autoimmune screening (ANA) was negative. Hepatitis B, C and HIV infections were ruled out by pertinent tests. Dengue serology (IgG, IgM levels) and NS-1 antigen were positive. For persistent pancytopenia, bone marrow was done which was suggestive of suppressed normal hemopoiesis, decreased megakaryocytes, with cellularity of fat cells, lymphocytes, plasma cells and reticulum cells.

Child was transfused with packed RBCs and platelets on multiple occasions for persistent pancytopenia and IV antibiotics were given. Child was started on immunosuppressive therapy with dexamethasone and cyclosporine and was discharged with regular follow up. At follow up after 8 weeks, the haemoglobin stabilized to 10 mg/dl with WBC count of 5000/cmm and platelet count of 80000/cmm.

DISCUSSION:

Aplastic anemia is a syndrome of bone marrow failure characterised by peripheral pancytopenia and marrow hypoplasia with an incidence of 1.4 to 14 cases per million population and is higher in the Asian countries.—(3) Aplastic anemia is considered an autoimmune disease, pathophysiologically characterised by T- cell mediated organ specific destruction of bone marrow hematopoietic cells. (4)

Aplastic anemia can be associated with infections agents such as viruses including Hepatitis, Epstein Barr virus, Parvo B-19 virus, CMV; drugs like Chloramphenicol, antiepileptic drugs, gold salts, anti-thyroid drugs, toxins and radiations can also act as a trigger to the disease.(5) The clinical picture includes anemia related syndrome, fever and hemorrhage. In this case, child presented with fever, bleeding manifestations and pancytopenia The main differential diagnosis are Paroxysnmal nocturnal hemoglobinuria, acute leukemia and myelodysplastic syndrome and Viral hemorrhagic fever.–(6) In Indian scenario, dengue hemorrhagic fever and Kaysnaur Forest disease is endemic.(7) On investigating further our patient had positive dengue serology (NS-1, IgG,IgM). Aplastic anemia can occur as a rare complication of dengue hemorrhagic fever and there are few case reports showing association of dengue fever and aplastic anemia.(6)(8)(9) In present case dengue serology was positive with bone marrow hypoplasia, attributing Dengue virus to be secondary cause of Aplastic anemia. The association between viral infection and different forms of bone marrow failure is due to viral induced inhibition of multiplication of hematopoietic cells. Infection related changes occur first in lymphocytes in the form of abnormal vacoulisation followed by reticulocytopenia, lymphocytopenia, thrombocytopenia and granulocytopenia after viral infection. –(6)It is known that dengue subtype DEN-4 can reproduce in progenitor cells from the bone marrow making bone marrow hypocellular through direct injury.(5) It also incites immunological response by T-lymphocyte activation and Gamma- Interferon production causing indirect injury to bone marrow leading to cellular destruction. There have been very few cases reported of severe aplastic anemia secondary to Dengue fever in the literature; in this study we have discussed one similar presentation.(9)

Although, HLA compatible stem cell donor is treatment of choice in aplastic anemia, but some patients respond to immunosuppressive therapy which can lead to complete remission if treated early.(5) In this case, after diagnosing aplastic anemia secondary to dengue fever , child was started on cyclosporine and then followed up for further outcome. According to one case reported by Ramzan et al, in which 8 years old female child had pancytopenia with serology for Dengue fever positive, received multiple transfusions, no spontaneous recovery for 3 months after which child was started on Cyclosporine and Anti-thymocyte globulin and later became transfusion dependent.(8) There is a need for early diagnosis and early immunosuppressive treatment. Aplastic anemia is a rare complication

of Dengue fever but it must be identified early, especially in endemic areas.

CONCLUSION:

Aplastic Anemia can occur as a rare complication of dengue fever and should be kept as differential diagnosis in patient with pancytopenia, especially in endemic areas. If diagnosed early and started on immunosuppressive therapy, it can have favourable outcome.

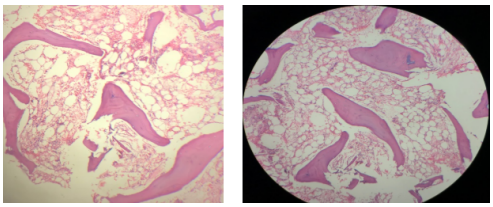

Figure 1: Bone marrow biopsy showing features of aplastic anemia

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