Chediak-Higashi Syndrome: A Rare Case Report

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Abstract

This case report is of a 5 year old male child with progressive distension of the abdomen, breathlessness, fever, pallor and abnormal discoloration of the body and hair since the age of 2 years and diagnosed as rare disease called Chediak-Higashi Syndrome (CHS). Chédiak-Higashi syndrome (CHS) is a childhood autosomal recessive disorder of the immune system that affects multiple systems of the body. Patients exhibit hypopigmentation of skin, eyes, and hair, prolonged bleeding time, recurrent infections, easy bruisability, abnormal natural killer cell function and peripheral neuropathy. Mutations have been found in CHS1 gene or LYST and are localised to bands 1q42-43 which lead to abnormal intracellular protein transport.

Key words: *Chediak Higashi, Hemophagocytic lympho-histiocytocis, Hematopoietic stem cell transplantation*

Introduction

Chediak-Higashi Syndrome (CHS) is a rare autosomal recessive disorder characterized by variable degrees of oculo-cutaneous albinism, recurrent infections, a tendency for mild bleeding and late neurologic dysfunction.[1] The disease affects multiple organs and system. Death often occurs early because of infection, bleeding, or development of hemophagocytic lympho-histiocytosis (HLH).[2,3]

Case Report

A 5 year old female second issue of consanguineous marriage was admitted with progressive distension of the abdomen, breathlessness, fever, pallor and abnormal discoloration of the body since the age of 2 years. The child also had history of recurrent gastrointestinal and respiratory infections. Developmental milestones were normal and she was immunized till date. There was no family history of similar complaints.

On Examination – Anthropometry was normal for age. There was mild pallor. There was shiny silvery grey discoloration of the hair and slate grey discoloration of the skin over the face, back, trunk and abdomen with mottled areas of hypopigmentation over the abdomen. Eyes were light brown in color and there was no photophobia/nystagmus. The fundus was normal.

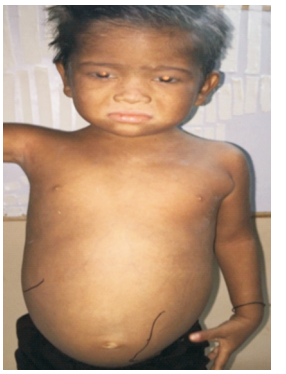

Fig. 1- Discoloration of skin and hair with mild hepatomegaly and massive splenomegaly

Examination of the abdomen revealed mild hepatomegaly with a non-tender liver, smooth surface, sharp border and span of 9 cm. Massive splenomegaly palpable 13 cm below, the left costal margin. There was evidence of free fluid in the peritoneal cavity (fig. 1) Cardiovascular, respiratory and central nervous system were normal

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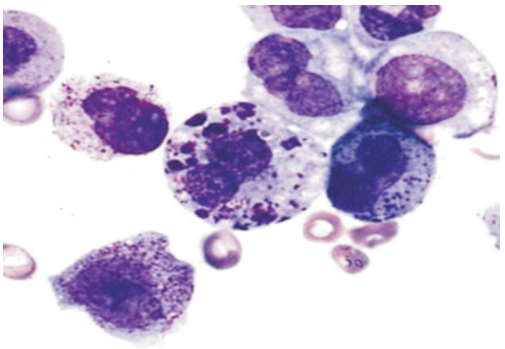

Fig-2 showing purple granules in bone marrow examination

The findings of the laboratory investigations were as follows: Hb-6.0 g/dl, a total leukocyte count of 3200 cells/µL, P-20, L-76 , E-0,M-4 and ESR 36 mm at end of 1 hour. Platelet count was 56000 /µL and reticulocyte count was 2.3%. MCV- 69.2, MCH-22, MCHC- 31.8, RDW-23.9. The peripheral smear showed abnormal large irregular slate grey granules in neutrophils, activation and proliferation of cytotoxic T lymphocytes (C TL s) and NK cells.[4,5] Activated lymphocytes and macrophages secrete high levels of pro- and anti-inflammatory cytokines and chemokines, giving rise to the characteristic clinical and laboratory findings. Histopathology reveals lymphoproliferative infiltration of the bone marrow and reticulo-endothelial system.[6]

The backbone of treatment for CHS - focuses on three main areas: supportive management of disease derived complications, treatment of the "accelerated phase" or HLH (hemophagocytic lympho-histiocytosis (HLH),[7] and HSCT (Hematopoietic stem cell transplantation)

Management includes - early disease identification and diagnosis. While these patients can safely receive all killed or inactivated vaccines, live vaccines are contra-indicated. The duration of antimicrobial therapy to treat common infections should ideally be two to three times longer than standard recommendations.[8]

Patients may exhibit an increased bleeding tendency owing to platelet dysfunction caused by delta storage pool deficiency. Preventive measures include avoidance of drugs that interfere with platelet functions such as aspirin, other non-steroidal anti-inflammatory agents, or serotonin reuptake inhibitors. Intramuscular injections are prohibited.

1) The therapy of HLH involves a two-pronged approach aiming to suppress the exaggerated immune responsethrough the use of immunosuppressive agents and a long-term strategy attempting to definitively correct the underlying genetic defect by allogeneic HSC T as early as possible, when an acceptable donor is available.[9]
2) Hematopoietic stem cell transplantation– Allogenic HSC T appears to be the most successful treatment, if performed prior to the accelerated phase in the early-onset form of CHS, for prevention of life-threatening infections and HLH.

Conclusion

A timely diagnosis is imperative and the disorder can be easily screened for with a simple, quick, and non-invasive careful examination of a peripheral blood smear. Early treatment of children with CHS is of paramount importance.

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