

# A case report of hemophagocytic lymphohistiocytosis (HLH) in a child mimicking tuberculosis

## Abstract

Hemophagocytic lymphohistiocytosis (HLH) is a fatal but distinct disease in which uncontrolled activation of immune system occurs. It is characterized by fever, pancytopenia, splenomegaly and hemophagocytosis in bone marrow, liver or lymph nodes. It has been associated with viral, bacterial, fungal and parasitic infection. Although an early diagnosis and treatment is the key to decrease the mortality but it is difficult to diagnose this case as it involves numerous laboratory tests which are non specific. We report a case of EBV infection induced hemophagocytic lymphohistiocytosis in a 13 year old male child presenting with prolonged fever, pancytopenia, hepatosplenomegaly, multiple lymphadenopathies, aphthous ulcer and skin rashes. This case highlights that awareness of this entity, high index of suspicion and team work between clinician and pathologist can help in early diagnosis and treatment of the patients thereby decreasing the mortality rate.

**Keywords:** hemophagocyte, infection, immune activation

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## Introduction

It is a distinct clinical entity in which excessive uncontrolled activation and proliferation of T cells and macrophages occur and are often fatal. It was first described in 1939 by Scott and Robb-Smith<sup>1</sup> as a histiocytic reticulosis, a neoplastic proliferation of histiocytes. To date, this syndrome remains ill-recognized in children, leading to false or delayed diagnosis and suboptimal management. According to Henter et al.,<sup>2</sup> the incidence of HLH in children is 1.2 cases/million/year, but it is believed that these figures are strongly underestimated. It is of two types: Familial (primary) or acquired (secondary) HLH. Acquired HLH is associated with several viral, bacterial, fungal and parasitic infections as also autoimmune diseases and malignancies. This case is being presented to highlights the severity of the disease.

## Case report

A 13 year old boy presented with complaints of dyspnoea, high grade fever with chills on and off, skin rashes and mucositis from one month. There are no significant past, family and drug history. Examination findings (clinical and radiological) include pallor, icterus, cyanosis, anemia, inguinal and axillary lymphadenopathy, hepatosplenomegaly, mucositis, skin rashes, pleural and pericardial effusion. Blood investigation showed pancytopenia comprising haemoglobin-6.7gm%, total leukocytes count-1500 and platelets-40,000. On the basis of above findings, tuberculosis was suspected and patient was started on ATT. But the patient condition deteriorated. Further investigations were done to aid the diagnosis. LDH was 4000IU/L, Ferritin-5463ng/ml. Triglyceride-433mg/dl. Viral serology for EBV was found to be positive (ELISA). Routine urine examination was normal. Bone marrow aspiration was done and revealed numerous macrophages with hemophagocytosis-engulfing lymphocytes, RBC. The particles were hypo cellular and all the lineages were suppressed.

Fine needle aspiration cytology of nodes revealed reactive features. The final diagnosis of Acquired hemophagocytic syndrome associated with EBV infection was rendered. The treatment was started accordingly and patients responded to the treatments. He was shifted from ICU to ward.

Unfortunately the patient was discharged against the medical advice as he was unwilling to stay. He came back after one month but the condition was very serious as he had discontinued the treatment. In spite of aggressive treatment patient succumbed to disease due to liver failure.

## Discussion

Hemophagocytic lymphohistiocytosis (HLH) is an immunological disorder characterized by fever, pancytopenia, splenomegaly, and hemophagocytosis in bone marrow, liver, or lymph nodes along with hyperferritinaemia, hypercytokinaemia, hypofibrinogenaemia, hypertriglyceridemia, multi-organ failure.

Criteria for the diagnosis of HLH proposed by the Histiocyte Society<sup>3</sup> include clinical, laboratory, and histopathologic features. Fever and splenomegaly are the most common clinical signs, but hepatomegaly, lymphadenopathy, jaundice, and rash are also seen. The rash is commonly described as maculopapular, but nodular eruptions have also been described. In the present case, most of the findings were present—Fever pancytopenia, splenomegaly, hemophagocytosis in bone marrow, hyperferritinemia, hyper triglyceridemia, rashes and increased LDH. It was associated with EBV infection as the viral serology was positive. HLH with EBV infection is associated with poor prognosis if not treated early.<sup>4</sup> It also needs to be differentiated from other conditions like Sepsis, SIRS, MODS and Macrophage activation syndrome which can mimic HLH, as the management strategies' and outcome of each differ according to the etiology. The standard treatment for HLH is aggressive immunochemotherapy and

supportive care. In spite of this most of the patients has a fatal course. In our case patient had discontinued the treatment and was lost to follow up. The immune system may have become more active after one month and was difficult to suppress it. This might be the cause of death.

## Conclusion

HLH is fatal and rare disease. The strong suspicion and multidisciplinary approach among experienced clinicians, pathologists, and microbiologists to define the diagnosis and the precipitating illnesses is the key to diagnose this case. Early detection and treatment may decrease the morbidity and mortality of patients.

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None.

## Conflict of interest

The authors declare that they have no conflict of interests.

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