

## **A case of haemophagocytic syndrome with reactive plasmacytosis in a 16 Years old immuno compromised patient**

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**Abstract:** Here, we report an uncommon case of haemophagocytic syndrome with reactive plasmacytosis in a 16 years old immuno compromised patient. No single clinical feature alone is diagnostic of HLH and it is important that the entire clinical presentation be considered in making the diagnosis. Early initiation of treatment on clinical suspicion is important for the improvement of survival.

**Keywords:** Haemophagocytosis, Haemophagocytic lymphohistiocytosis, Plasmacytosis.

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### **INTRODUCTION**

The term haemophagocytosis describes the pathologic finding of activated macrophages, engulfing erythrocytes, leukocytes, platelets and their precursor cells [1]. This phenomenon is an important finding in patients with haemophagocytic syndrome, more properly referred to as haemophagocytic lymphohistiocytosis (HLH) [2] or, occasionally as histiocytic medullary reticulosis [3]. HLH is characterized by fever, pancytopenia, splenomegaly and haemophagocytosis in bone marrow, liver or lymph nodes. The syndrome has since been associated with a variety of viral, bacterial, fungal and parasitic infections, as well as collagen vascular disease and malignancies, particularly T-cell lymphomas [4, 5]. Here dietary and sporadic cases of haemphagocytosis are primarily seen in children. Although it is uncommon in adults, cases have been reported especially in previously healthy adults [6, 7]. The history of this disorder, its molecular basis and treatment options are noteworthy [8, 9].

According to histiocyte society, haemophagocytic syndrome is defined by the presence of at least five of the following diagnostic criteria [10].

1. Fever
2. Splenomegaly
3. Bicytopenia
4. Hyper triglyceridemia and/or hypo fibrinogenemia
5. Haemophagocytosis
6. Low/absent NK cells activity.
7. Hyperferritinemia
8. High – soluble interleukin-2 receptor levels.

Here, we report an uncommon case of haemophagocytic syndrome with reactive plasmacytosis in a 16 years old immuno compromised patient.

### **CASE REPORT**

A 16 years old male was admitted to our hospital with complaints of generalized joint pains and 10 days history of persistent fever. He had no significant past illness. On general examination, he was cachexic, conscious but irritated and confused. Skin and mucous membranes were pale in colour. He had temp of 103<sup>0</sup>F, BP 110/70 mm of Hg, pulse rate 126 beats/minutes and cervical lymph nodes were palpable. Per abdomen examination revealed moderately enlarged liver and spleen with loss of skin turgor.

**Laboratory Investigations:** The patient's investigations revealed the following results

**Haemogram:** Hemoglobin: 5.4 gm/dl, Total Leukocyte Count:  $1 \times 10^3 / \mu\text{l}$ , Differential Leukocyte Count: Polymorph-2, Lymphocyte-98, ESR (Wintrobe): 38 mm/1st hr. (Normal range: 0-10 mm/1st hr.) Platelet count:  $8 \times 10^3 / \mu\text{l}$ , S. Ferritin: 480 ng/ml (Normal – 20-400 ng/ml, in our laboratory)

**General Blood picture:** Predominantly normocytic normochromic RBC with moderate anisopoikilocytosis. In WBC series TLC was markedly reduced and differential count showed relative lymphocytosis. Large number of plasma cells was seen. Platelets were grossly inadequate.

**Coagulation Study:** Prothrombin Time (PT) & Activated Partial Thromboplastin Time (APTT) were within normal range.

**Biochemical Findings:**

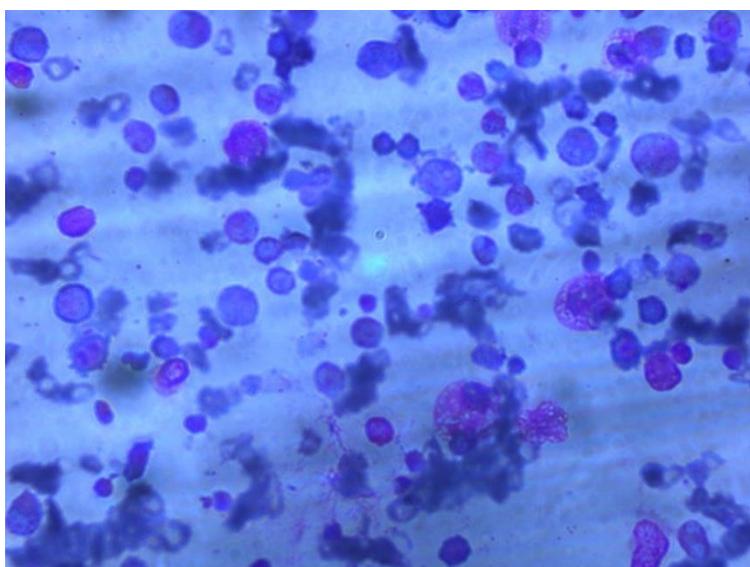
**Lipid Profile:** Tests were insignificant except raised serum triglycerides of 422 mg/dl (Normal range in our laboratory; 60-165 mg/dl). Blood Sugar was within normal range

**Liver Function Tests (LFT):** Other tests were normal except mildly raised ALT – 93 IU/L (Normal <49 IU/L, in our laboratory)

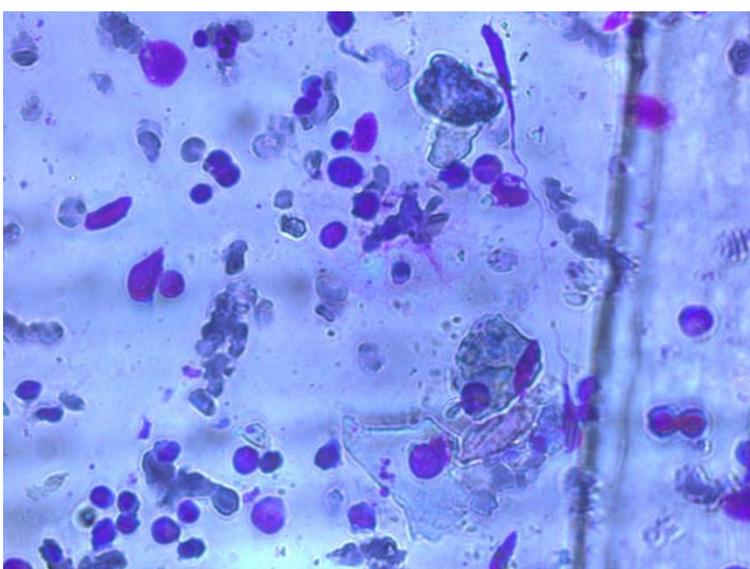
**Kidney Function Tests (KFT):** All tests were within normal range.

**Radiological Findings:** Ultrasonography revealed hepato splenomegaly with enlarged para-aortic lymph nodes. CT scan was not done. Blood Culture was Negative; Urine Examination was insignificant. On day two bone marrow aspirations was performed which revealed the following findings.

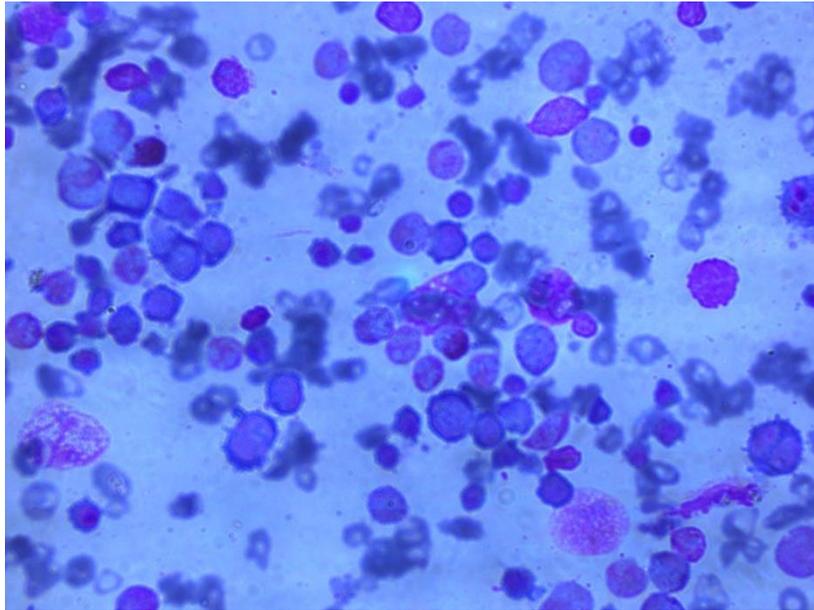
**Bone Marrow Examination:** Aspirate was adequate. Smears were hypo cellular for age. All the hemopoietic lineages were suppressed. Necrotic tissue was abundant. Large number of reactive plasma cells was seen. (Fig 1) Numerous macrophages in an activated state with features of haemophagocytosis were seen. (Fig 2 & 3) Few pseudogaucher cells were also present. Megakaryocytes were not seen. An impression of hypoplastic marrow with reactive plasmacytosis and features of haemophagocytosis was made.



**Fig 1: BM smear stained in Leishman's showing plasma cells and macrophages in a state of hemophagocytosis.**



**Fig 2: A hypo cellular BM smear showing hemophagocytosis.**



**Fig 3: Macrophages in a state of hemophagocytosis in BM**

**Flow Cytometry:** The NK cell activity was determined which resulted in its low activity.

**Diagnosis:** On the basis of diagnostic criteria as we mentioned in introduction. (The last parameter could not be determined in our hospital, but the present case met the other seven criteria). The patient was diagnosed as a case of haemophagocytic syndrome but before any specific treatment could have been started, the patient expired.

#### DISCUSSION

Haemophagocytic lymphohistiocytosis (HLH) is potentially a fatal hyper inflammatory condition caused by highly stimulated but ineffective immune response. It is classified into genetic HLH and secondary HLH. Both types can occur at any age and are associated with increased mortality. Secondary form is associated with exogenous agents (including viruses, bacteria, fungi, parasites and toxins), endogenous products (including those resulting from tissue damage, metabolic products and radical stress), rheumatic disease and malignant diseases.

In our case, patient presented with marked leucopenia and thrombocytopenia in addition to fever, splenomegaly, hyper triglyceridemia and hyper ferritinemia [10, 11]. With reduced NK cell activity. All findings were in concordance with the findings of Cao *et al.*; [10].

In India, bacterial infection like tuberculosis and viral infections like hepatitis and HIV are the commonest cause of immunosuppression in younger age group. Before we could ask for further investigations on these lines to establish the cause, our patient expired. This experience showed that, HPS is a life threatening condition. Its rarity combined with non

specific clinical features makes it a diagnosis that can be easily missed.

The following disorders should be considered in the differential diagnosis of hemophagocytic syndrome.

1. SLE
2. Macrophage activation syndrome.
3. Primary HLH.
4. Haematological malignancy like lymphoma with or without HLH.
5. Still's disease.
6. Hemophagocytic lymphohistiocytosis (HLH) secondary to infectio, eg; Epstein Bar Virus (EBV)

#### CONCLUSION

No single clinical feature alone is diagnostic of HLH and it is important that the entire clinical presentation be considered in making the diagnosis. Early initiation of treatment on clinical suspicion is important for the improvement of survival.

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