VOLUME - 10, ISSUE - 10, OCTOBER - 2021 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

General Medicine

# CASE REPORT ON DENGUE ASSOCIATED HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS- A RARE PRESENTATION.

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**ABSTRACT** Dengue fever in its severe form has significant morbidity and mortality worldwide. Apart from the common complication of dengue fever, infection induced HLH is a rare and life-threatening complication associated with the viral infection. Here we are presenting a case of 28 years old male with no comorbidities and complains of high-grade fever, myalgia, nausea and vomiting, black stools from 5 days. Based on all investigations patient was diagnosed with hemophagocytic lymphohistiocytosis secondary to dengue hemorrhagic fever. Then treated with appropriate medications and supportive therapy, discharged, and advised follow-up on OPD basis.

**KEYWORDS :** Dengue hemorrhagic fever, Hemophagocytic lymphohistiocytosis, Viral infection.

## INTRODUCTION

Dengue fever in its severe form has significant morbidity and mortality worldwide. An estimate of 5,000,00 people with severe dengue infection patients needed hospitalization each year, about 2.5% of them die. Apart from the common complication of dengue fever, infection induced HLH is a rare and life-threatening complication associated with the viral infection. In the critical phase of the disease, some complications occur, those were shock with organ dysfunction and severe bleeding& in rare cases it can be an additional complication of HLH due to aberrant immune mechanism (1).

HLH is a rare disease but potentially fatal condition caused by hyperresponsiveness of the immune mechanism. HLH is classified as familial(primary)that occurs in early life and has high fertility without appropriate therapy another is acquired(secondary) associate with different kinds of infections such as viral, bacterial, fungal, or parasitic and connective tissue diseases or neoplasms especially T-cell lymphoma. Among the viral infections, HLH is most commonly presented with infection of EBV (Epstein Barr virus), and very small percentage of cases it has been associated with dengue viral infection (2&3).

### Case Presentation:

Here we are presenting a case of 28 years old male with no comorbidities and complains of high-grade fever, myalgia, nausea and vomiting, black stools from 5 days. Initially, they went to the local hospital where platelets dropped to 21,000. Then came to tertiary care hospital for further management. so, he was undergoing some series of investigations. Based on that, provisionally diagnosed dengue pyrexia with severe thrombocytopenia and polyserositis, myositis. on evaluation, CT scan chest revealed pleural effusion and pneumonia. He was type 1 respiratory failure and not maintaining on NIV, kept on ventilator support. USG abdomen showed that hepatosplenomegaly and pancreatitis. Serum ferritin and LDH and D-Dimer, liver enzymes (SGOT, SGPT), Total bilirubin, direct and indirect bilirubin, and triglyceride levels were elevated, decreased fibrinogen levels, and acute kidney injury also present, required multiple hemodialysis.

Hematological investigations showed severe anemia and thrombocytopenia and multiple PRBC and SDP transfusions were done. But, platelets and hemoglobin fluctuations were continued. Based on all investigations and disease criteria he was finally diagnosed with hemophagocytic lympho histiocytosis secondary to dengue hemorrhagic fever (DHF). Then treated with corticosteroids, immunosuppressants, and intravenous immunoglobulins and appropriate antibiotics, anti-fungal, oxygen therapy, and supportive medications. after some days his condition was clinically improved and discharged with appropriate medications and follow-up advice on OPD basis.

**Table 1: showing lab parameters of the patient.**

| Parameter | Time of admission | During therapy | Time of discharge |
|---|---|---|---|
| Hb | 6.6 | 8.4 | 9.6 |
| WBC | 51000 | 13000 | 7300 |
| Platelets | 25000 | 83000 | 234000 |
| SGOT | 6833 | 842 | 94 |
| SGPT | 2110 | 553 | 106 |
| Total Bilirubin | 25.2 | 11.28 | 4.2 |
| Direct Bilirubin | 13 | 5.2 | 2.9 |
| Indirect Bilirubin | 12 | 6.01 | 1.3 |
| Serum Ferritin | 52950 | 1092 | 1092 |
| LDH | 9470 | 796 | 379 |
| Creatinine | 5.08 | 1.3 | 0.7 |
| Fibrinogen | 121 | 178 | 239 |

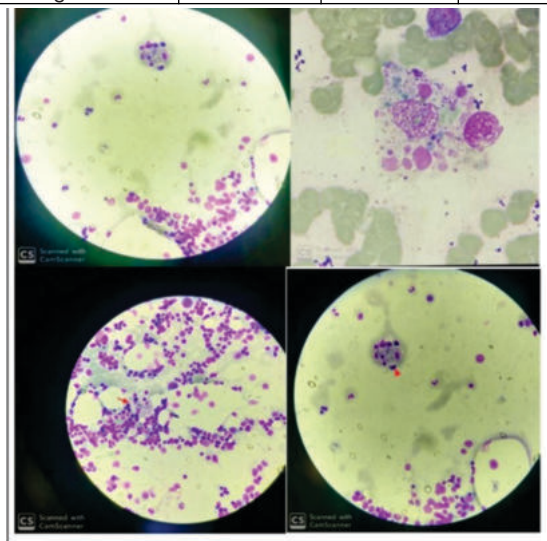

**Fig. 1** *Bone marrow Aspiration revealed phagocytosis.*

## DISCUSSION:

Here we discuss a case of 28 years old male patient diagnosis with HLH secondary to dengue hemorrhagic fever. Dengue is an arboviral disease caused by the dengue virus, belongs to the Flaviviridae group and it is endemic in more than hundred countries across the globe. WHO estimated that there are 390 million infectious dengue fevers each year in that, 96 million showing clinical manifestations. Around five percent of patients will develop severe dengue presenting leakage of plasma, hypovolemic shock, hemorrhage, organ failure with encephalopathy. small percentage of people with severe dengue will develop HLH (3)

HLH linked with dengue is described more commonly in children, with very less reports in adults. It has been most often in DHF patients. HLH has been reported in dengue fever with an estimated incidence of approximately 1.2 cases/1,000,000 individuals (4).

HLH is a rare inflammatory disease described by the activation of macrophages that leads to blood cells phagocytosis in the bone marrow. It is an uncommon presentation of dengue. in dengue infection, infected virus cells generate cytokines such as TNF – ALPHA, and Interferon-gamma which may be associated with the development of HLH syndrome (5)

Treating the specific cause, providing supportive therapy, and suppressing the immune response are the main stages of HLH management. the complexity of the clinical conditions and the difficult differentiation between sepsis and multiple organ dysfunction leads to delayed diagnosis in HLH. The diagnosis of HLH is the primary fundamental step towards the success of the therapy but it is difficult due to the uncommon occurrence, variable presentation, and unspecific findings of the disease.

### Diagnostic criteria for HLH (HLH-2004 Trial):

Diagnosis based on molecular diagnosis consistent with HLH: pathological mutations of PRF1, ANC13D, Munc18-2, Rab27-A, STX11, SH2D1A, or BIRC4.

### 5 of the eight criteria fulfilled are mentioned in below.

- Fever more than or equal 38.5°C
- Cytopenias (affecting at least two of three in the peripheral blood).

Hb< 9gm/dl
Platelets $< 100 \times 10^3$/ml.
Neutrophils $< 1 \times 10^3$/ml.

- Splenomegaly
- Hemophagocytosis in bone marrow, liver, spleen, lymph nodes,
- Hypertriglyceridemia (fasting more than 265mg/dl) or Hypofibrinogenemia (less than 150mg/dl).
- Low or absent NK cell activity.
- Ferritin higher than 500ng/ml.
- Elevated sCD25(alpha chain of sIL-2 receptor) (6).

In the present case, the patient fulfilled with 6 criteria out of 8. Oxford maria koshy et.al; reported a case of 29 years old male diagnosed with dengue associated HLH similar to this case and treated with pulse steroids (7). In our case patient was treated with the combination of steroids and IV IgG.

Fong kee kan et.al; conducted a retrospective study with 180 patients of dengue associated HLH .in their study 22% of patients died and those who took corticosteroids they almost survived among 60 -80% (8).

HLH is a disease presenting significant diagnostic and therapeutic challenges. the pathogenesis of severe dengue is not always well understood and it is now being increasingly believed that activation of macrophages may play a role in few instances of severe dengue. In more cases, pulse steroid therapy (dexamethasone& methylprednisolone) has been used to suppress the hyperinflammatory condition.in some cases, intravenous immunoglobulin has been used both alone and in combination with dexamethasone and methylprednisolone (9). In this case, the patient was treated with a combination of pulse steroids and IV IgG.

## CONCLUSION:

Dengue associated HLH is a very important and rare presentation. Still, some clinicians should not aware of this condition. so, this case report alerts the clinicians to consider the rare or unique presentation of very common or known seasonal infection. identification of HLH with dengue in the early stages is a big challenge to clinicians due to overlapping features of other infections. early suspicion or recognition and appropriate therapy are crucial for reducing disease progression and life-saving of patients.

## REFERENCES:


1. Wade M, Inamdar N, Bhaisara B, Mauskar A. Double trouble: hemophagocytic lymphohistiocytosis in a child with Dengue fever. Int J Contemp Pediatr. 2019;6(6):2675.
2. Singla K, Singh A, Sethi S, Datta PK. Hemophagocytic lymphohistiocytosis: a rare and fatal manifestation of dengue fever. Int J Res Med Sci. 2020;8(3):1138.
3. Cheo SW, Abdul Rashid WNFA, Ho CV, Ahmad Akhbar RZ, Low QJ, Rajahram GS. Haemophagocytic lymphohistiocytosis secondary to dengue fever: a case report. Hong Kong Med J. 2021;27(4):287–9.
4. Thangavelu S, Jenil Dhas C, Zeya Ansari M. Dengue fever complicated by hemophagocytosis – A difficult to manage case. open hematol j. 2019; 7(1): 1–5.
5. Khurram M, Faheem M, Umar M, Yasin A, Qayyum W, Ashraf A, et al. Hemophagocytic Lymphohistiocytosis Complicating Dengue and Plasmodium vivax Coinfection. Case Rep Med. 2015;2015:696842.
6. Jordan MB, Allen CE, Weitzman S, Filipovich AH, McClain KL. How I treat hemophagocytic lymphohistiocytosis. Blood. 2011;118(15):4041–52.
7. Koshy M, Mishra AK, Agrawal B, Kurup AR, Hansdak SG. Dengue fever complicated by hemophagocytosis. Oxf Med Case Reports. 2016; 2016(6): 121–4.
8. Kan FK, Tan CC, Von Bahr Greenwood T, Khalid KE, Supramaniam P, Hed Myrberg I, et al. Dengue infection complicated by hemophagocytic lymphohistiocytosis: Experiences from 180 patients with severe dengue. Clin Infect Dis. 2020;70(11):2247–55.
9. Ray U, Dutta S, Mondal S, Bandyopadhyay S. Severe dengue due to secondary hemophagocytic lymphohistiocytosis: A case study. IDCases. 2017;8:50–3.