

## **Case Report**

### **DENGUE HEMORRHAGIC FEVER**

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#### **ABSTRACT**

Dengue fever is an airborne viral infection transmitted by the Aedes mosquito with various presentations, from a simple flu-like illness to hemorrhagic manifestations. Hemorrhagic complications can vary from simple rashes to GIT bleeding, hematuria, and severe bleeds in the brain. Here is a case of 24 years old Umer Ayub with dengue fever along with its hemorrhagic manifestations and decompensated shock state who was intubated and put on a ventilator, given 16 blood transfusions, but later his labs improved, he was extubated and recovered well from a condition which has mortality rate above 95%.

**Key Words:** Dengue Fever, Infection, Liver Failure

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## **INTRODUCTION**

Dengue fever is an airborne viral infection caused by the Aedes aegypti mosquito, which can be a potentially life-threatening infectious disease with a wide spectrum from mild to severe. It has 4 different serotypes, which are DEN-1, DEN-2, DEN-3 and DEN-4. Poor sanitary conditions and unhygienic measures are leading causes of the excessive proliferation of mosquitoes and dengue infections. In mild cases, there can be fever, retro orbital pain, rash, muscle aches, nausea and vomiting; in severe cases, there can be bleeding from nose, gums and GIT, organ failure and plasma leakage due to immune response triggers.<sup>1</sup>

However some other complications include encephalopathy, myocarditis, pancreatitis, liver failure, acute kidney injury, splenic rupture and muscle hematoma.<sup>2,3</sup>

All these complications are rare but can be prevented if diagnosed earlier.

## **CASE PRESENTATION**

The patient named Umer Ayub, 24 years of age presented to the emergency department of Farooq hospital Westwood branch with a GCS of 3/15 in a gasping state and Blood pressure of 40/20mmHg. He was immediately shifted to ICU and electively intubated and ventilated

Baseline labs showed hemoglobin of 2.5 and a Platelet count of 14000. He suffered from severe dengue hemorrhagic fever, decompensated shock and leakage phase. He also suffered from Multi-organ failure with acute liver injury, acute kidney injury, altered state of consciousness, and lower respiratory tract infection (Aspiration Pneumonia). In addition, he had severe coagulopathy with INR over 3.

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Sr No.	Investigation/units	1st day	5th day	Last day
1.	F.D.Ps D-dimer ug/dl	2.92		
2.	CRP mg/dl	7.57		
3.	Hemoglobin g/dl	5.6	10.3	11.5
4.	WBC 10 <sup>3</sup> /l	20	17.7	12.4
5.	Platelets 10 <sup>3</sup> /l	55	21	89
6.	PT sec	32	16	15
7.	INR sec	3.08	1.29	1.19
8.	APTT sec	>1	42	38
9.	ALTu/l	122	140	58
10.	ASTu/l	171	189	43
11.	ALPu/l	110	203	256
12.	Total proteing/dl	3.5	4.8	5.9
13.	UREA mg/dl	52	36	
14.	Creatinine mg/dl	12	1.0	
15.	Sodium (Na) mmol/l	133	140	133
16.	Potassium(K) mmol/l	145	4.2	3.8
17.	Iron ug/l	68		
18.	Ferritin ug/ml	3268		
19.	TIBC ug/dl	156		

Patient remained on Ventilator for 7 days. During this time, he received 16 Blood transfusions and 4 FFP transfusions.

Revolade (eltrombopag) and oprelvekin (IL 11 agonist) were used to stimulate rapid platelet production along with octreotide and omeprazole infusion to reduce GI bleeding.

On 7th Day, he was gradually weaned from the Ventilator and successfully extubated. Now patient is vitally stable, and his platelet counts are recovering; his liver function, kidney function tests and blood counts are normal. He had severe lower GI bleeding which continued persistently for 5 days despite all resuscitative measures.

The patient remained on triple inotropic supports, including morphine, dopamine and phenylephrine. In addition, the patient underwent a Colonoscopy which showed a massive lower GI Bleed from above the level of caecum. Plan was to do CT angiography of mesenteric vessels. However, it couldn't be done due to the patient's unstable condition. On the 6th day the bleeding stopped spontaneously and the patient showed signs of recovery. This patient recovered from a condition with more than 95% mortality.

## DISCUSSION

DHF is categorized as DF associated with a decrease in the platelet count, plasma leakage and hemorrhagic manifestations. DF is a mosquito-borne tropical infection with an increasing number of cases yearly. In the 1950s, the approximated cases recorded per annum to the World Health Organization (WHO) was almost 900 among the enlisted countries. It has been reported that the occurrence of DF has remarkably risen with an estimated rate of 0.5 million diagnosed patients outlined in the year 2000 whereas 3.3 million patients reported in 2015.<sup>5</sup> DF febrile phase starts with sudden rise in body temperature, headache, body aches and retro-orbital pain continues for 2-7 days which is accompanied by plasma leakage in defervescence stage of 3-4 days. Bleeding-related symptoms of DHF usually initiate in the defervescence phase.<sup>4</sup> DHF is categorized into 4 different grades owing to the severity of the clinical features.<sup>6,7</sup> Grade I shows a positive tourniquet test involving no bleeding. Grade II shows bleeding, including ecchymosis, nose bleed, GIT hemorrhage, blood in urine, menorrhagia, or even bleeding into vital organs such as the brain and pulmonary system. Grade III indicates hypotension with a feeble pulse causing cardiac compromise. Grade IV involves features of shock. In this case report, the patient belongs to the grade IV category DHF because he had hypotension, plasma leakage and decompensated shock leading to multiorgan failure.

The exact mechanism of bleeding is not clearly understood and is believed to be caused by multiple etiological factors. However, plasma leakage is considered crucial in hemorrhagic episodes in DHF. Several studies suggested that the plasma leakage is due to the release of numerous inflammatory mediators such as interleukin (IL)-2, IL-4, IL-6, IL-8, IL-10 and interferon (INF)- $\gamma$  which cause endothelial damage that

leads to increase in vascular permeability and activation of the coagulation pathway, platelet activation and fibrin breakdown ultimately causing Dengue shock syndrome (DSS).<sup>8-10</sup>

The mainstay of treatment in bleeding events in DHF is to compensate for the depleted intravascular volume. Unstable patients require aggressive and urgent treatment. They should be immediately transferred to the intensive care unit (ICU) and intravenous fluids should be given immediately. Blood pressure, heart rate, respiratory rate, oxygen saturation, and urine output should be monitored every 15 minutes. Fresh frozen plasma should be administered in case of active bleeding manifestations. If the platelets count is less than 20,000 without bleeding or 21,000-40,000 with bleeding then the platelets should be transfused.

## CONCLUSION

DHF is a fatal condition but curable if diagnosed and treated earlier. The mainstay of the treatment in severe cases is to replenish the fluid loss and intravascular volume along with blood transfusions and fresh frozen plasma. The delay in diagnosis and treatment can lead to an increased mortality rate in patients with DHF.

## AUTHOR'S CONTRIBUTION

ZJ: Original idea, data collection and writing the case report

UF: Review of literature

SK: Data collection

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