

Alveolar Hemorrhage: A Rare Complication in Dengue

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ABSTRACT

Dengue is a major public health problem in India. This is the most common arthropod-borne viral infection caused by Flavivirus. According to the World Health Organization, 2009, dengue is classified as dengue with or without warning sign and severe dengue. Severe dengue infection can present with severe plasma leakage, severe bleeding, or severe organ dysfunction; if left untreated, death is inevitable. Alveolar hemorrhage is one of the rare but severe hemorrhagic manifestations, rarely reported in dengue which is only limited to few case reports. Here we are reporting as case of severe dengue presenting as diffuse alveolar hemorrhage.

Keywords: Dengue, Dengue pneumonitis, Hemorrhage, Severe dengue infection.

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INTRODUCTION

Dengue is a viral disease caused by Dengue virus (DENV), which belongs to the flaviviridae family. Four distinct serotypes of dengue viruses (DEN 1–4) from which humans can get infected.¹ Dengue virus needs vector (aedes mosquitoes) for the transmission of disease, and female aedes mosquitoes transmit the disease to human beings.¹

Dengue disease has a wide clinical spectrum, ranging from asymptomatic infection to severe hemorrhagic manifestation (DHF).¹ Pulmonary manifestations such as pleural effusion and pneumonitis, are uncommon in Dengue, and pulmonary hemorrhage is even more rare.²

CASE REPORT

A 50yr-old-male with no known co-morbidities and with a history of intermittent bleeding per rectum for 1 year, now presented to our hospital with history of upper abdominal pain since last 2 days. On examination, tenderness was noted in the right upper quadrant region and per rectal examination showed grade 3–4 haemorrhoids. The USG abdomen was suggestive of cholelithiasis with 2 calculi measuring 6.5 mm and 5 mm. Next day, he underwent laparoscopic cholecystectomy with adhesiolysis and laser haemorrhoidopexy under general anesthesia. He was then shifted to the wards since the procedure was uneventful. On postoperative day 2, the patient complained of breathless and noted to be hypoxic therefore, shifted to ICU for further management and care. In the ICU, he was noted to have anemia (Hb 8%), increased haematocrit (Hct = 54) thrombocytopenia (platelets = 71,000/mm³) and leukopenia (3100/mm³). His chest roentherogram showed scattered patchy opacity in both lung fields (Fig. 1). Subsequent HRCT thorax revealed crazy paving pattern (Figs 2A and B). Bronchoscopy and BAL was done which showed hemosiderin laden macrophages which was suggestive of diffuse alveolar haemorrhage (DAH). In view of low platelets, tropical fever panel was sent which was positive for Dengue NS-1. As he was tachypneic he was initially started on HFNC (40%FIO₂ and 40 LPM of flow), IV fluid and other symptomatic management. On Post operative day 5, there was clinical and haematological improvement, radiological resolution was noted on postoperative day 7 (Fig. 3).

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Patient consent statement: The author(s) have obtained written informed consent from the patient for publication of the case report details and related images.

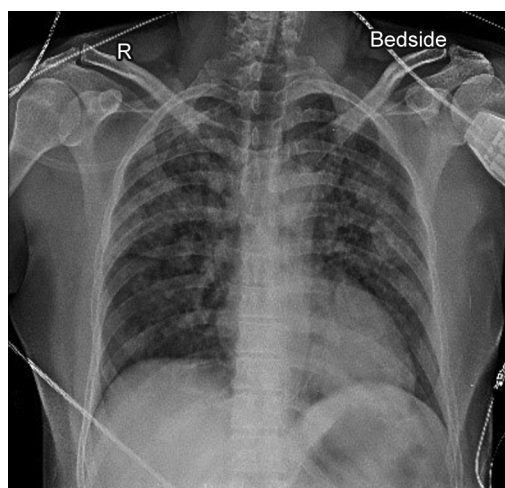
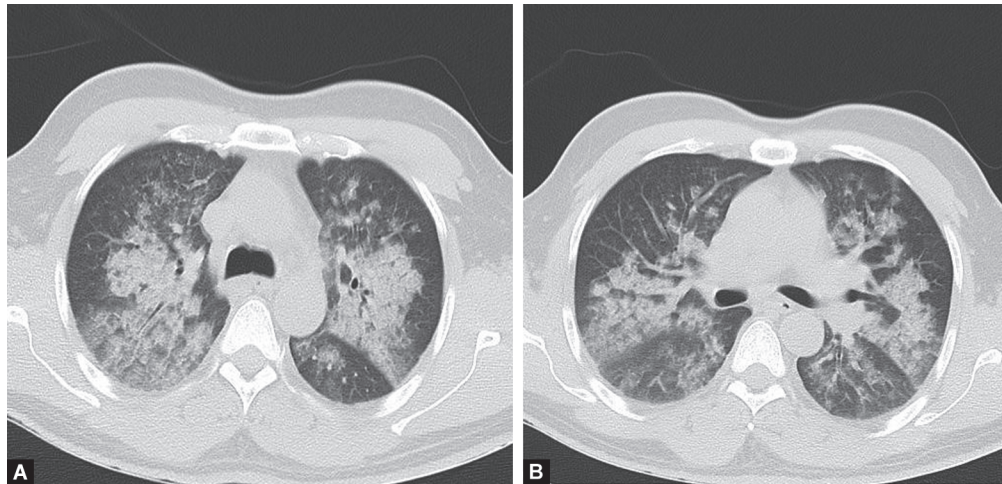


Fig. 1: Chest X-ray showing patchy ground glass opacity (crazy paving pattern) in bilateral lung fields on postoperative day 2



Figs 2A and B: HRCT showing patchy ground glass opacity (crazy paving pattern) in bilateral lung fields on postoperative day 2

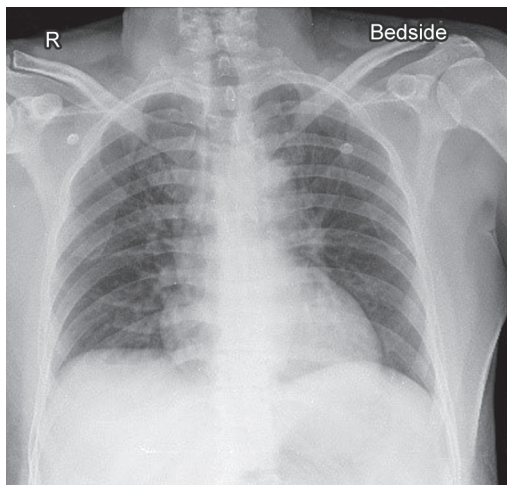


Fig. 3: Chest X-ray on postoperative day 7 showing resolution of patchy ground glass opacity

DISCUSSION

Pulmonary complication can occur as a part of serositis, most common is pleural effusion. Other pulmonary manifestations are dengue pneumonitis, acute respiratory distress syndrome (ARDS), and very rarely pulmonary hemorrhage.²

The pathophysiology of lung disease is still not conclusive. A possible mechanism would be first, thrombocytopenia causing spontaneous bleeding into the lung even requiring blood transfusion as noted by Sharma et al.³ Second, plasma leakage during critical phase as a consequence of dengue immunopathology.⁴ Third, secondary superimposed lung infection in dengue infection is also noted.⁵

Diffuse alveolar hemorrhage is an uncommon yet severe lung disease in dengue and manifests as hemoptysis and dyspnea.³⁻⁵ This can be detected early by lung CT scan.^{6,7} The pattern is usually seen as patchy ground glass opacity with inter- and intralobular septal thickening (crazy paving appearance) suggestive of alveolar hemorrhage, other pathologies which appears similar in HRCT thorax are ARDS, pneumonia, pulmonary edema, etc.,^{6,7} which can be differentiated from diffuse alveolar hemorrhage by bronchoscopy and BAL which shows intra-alveolar red blood cell and fibrin, with the eventual accumulation of hemosiderin-laden macrophages.^{8,9} In immunocompetent

host, COVID, influenza A (H1N1), and tropical infection like malaria, leptospirosis, and *Staphylococcus aureus* are other differential diagnoses.¹⁰ The management is usually supportive and symptomatic.

CONCLUSION

Pulmonary hemorrhage is a rare but severe complication associated with dengue. It is important to have dengue as one of the differential diagnoses when we encounter diffuse alveolar hemorrhage. The management requires a high index of suspicion, prompt evaluation, fluid and electrolyte balance, and oxygen support.

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