

Clotted hemothorax: An uncommon presentation of dengue fever

Sir,

Dengue, the most common arboviral infection worldwide, mainly in tropical and subtropical regions, is transmitted by the bite of efficient epidemic vectors *Aedes aegypti* and *Aedes albopictus* mosquito. According to the WHO, the severe form of dengue is mainly identified by (1) severe plasma leakage leading to dengue shock syndrome (DSS), fluid accumulation (ascites and pleural effusion), and respiratory distress; (2) severe bleeding and (3) multi-organ involvement. As dengue is becoming globally widespread, there is an increasing number of reports of underrecognized and atypical manifestations which have been covered under the umbrella of “expanded dengue syndrome” by the WHO.^[1]

A 30-year-old female came to the emergency department with high-grade fever, myalgia, decreased oral intake, and mild breathlessness of 3 days’ duration. Her clinical parameters were – BP 90/70 mm Hg; pulse rate was 84/min; respiratory rate 22/min and oxygen saturation 96% on room air. Auscultation revealed decreased air entry in basal regions of the lungs. Epigastric and the right hypochondriac regions were tender on palpation. She had a diffuse erythematous rash predominately on the trunk area. Day 1, the initial blood investigations were Hb 15.3 g/dl, packed cell volume (PCV) 43.7%, total leukocyte count 15,000/dl, and thin layer chromatography 3100/dl. Coagulation profile showed prothrombin time/International Normalized Ratio/activated partial thromboplastin time – 14.40/1.30/66.80. LFT showed elevated transaminases [Aspartate Aminotransferase 271, Alanine Aminotransferase 102]. Dengue NS1 antigen was positive. Chest X-ray showed mild bilateral pleural effusion [Figure 1a]. Ultrasonography (USG) of the abdomen suggested cholelithiasis with gallbladder wall edema, mild hepatomegaly, and moderate ascites. She was admitted to the intensive care unit for close monitoring and medical management. Day 2 of hospitalization, complete blood cell count (CBC) showed a fall in platelet counts (12,000/dl) for which 1-unit single-donor platelet concentrates (SDPC) was transfused. Day 3, the patient complained of breathlessness with chest discomfort. CBC showed a drop in hemoglobin (15.3–9.0 g/dl) and hematocrit (PCV 25%) and platelet counts of 15,000/dl. Clinically, air entry was grossly reduced on the right side. A repeat chest X-ray showed opaque right hemithorax [Figure 1b]. USG-guided diagnostic pleural fluid aspiration which followed by the insertion of

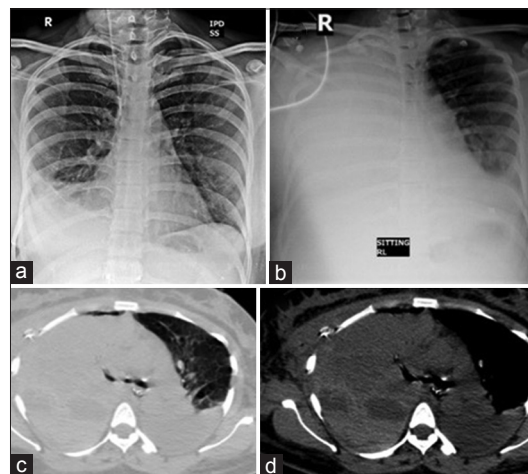


Figure 1: Chest X-rays showing mild pleural effusion (a) and opaque hemithorax (b). Contrast-enhanced computed tomography thorax lung window (c) shows complete collapse of the right lung and the mediastinal window shows clotted hemothorax (d)

intercostal chest drain (ICD) drained 750-ml hemorrhagic fluids. Day 4, a repeat hemogram showed a continuing fall in hemoglobin (from 9.0 to 4.1 g/dl) and PCV (from 25% to 11.6%). Platelet counts were 44,000/dl. Two units packed red blood cell, 1 unit SDPC and 4 units fresh frozen plasma were transfused to the patient. Day 4, drainage from the chest tube was minimal and chest X-ray was done continued to show an opaque right hemithorax. USG chest was done to reposition chest tube which showed large multiloculated pleural collection. The patient had seizures with a fall in oxygen saturation for which she was intubated and placed on ventilator support. Computed tomography (CT) scan of the head showed diffuse cerebral edema and CT thorax showed a complete collapse of the right lung, right clotted hemothorax and left pleural effusion [Figure 1c and d]. Thoracic surgery consultation was taken, and the right thoracotomy with bilateral tube thoracostomy was planned for the removal of blood, blood clots, and ligating a possible bleeding vessel. Multidisciplinary team debated the risks and benefits and agreed for an operative intervention. Intraoperatively, large blood clots were present in the pleural space with thin pleural peel over the lung [Figure 2a]. Postprocedure, her lungs expanded and air entry significantly improved [Figure 2b]. She was weaned off from the ventilator and extubated on the 3rd postoperative day (POD). Breathing efforts improved (SpO₂ 90% on room air) with an improving blood counts, liver, and renal functions. The platelet counts showed improving trend from day 5 and remained

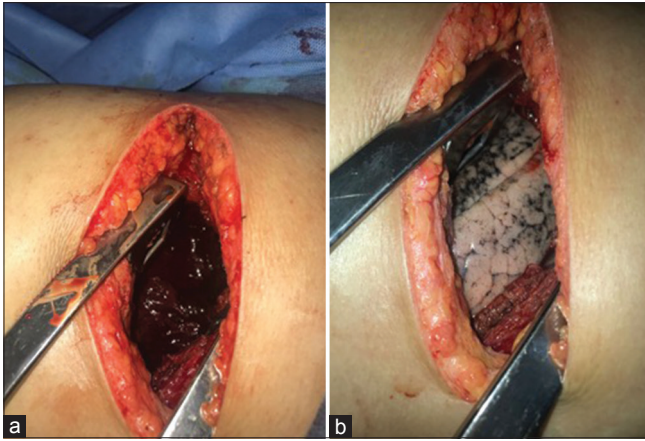


Figure 2: Thoracotomy window shows blood clots (a) and expanded lung (b) following the removal of blood clots and pleural peel

above 100,000/dl during the postoperative period. Apical and basal ICD was removed on POD 5 and POD 7. Her postoperative recovery remained uneventful and she was discharged from hospital on POD 10. The patient continues to be in follow-up and is doing extremely well without any sequelae.

The clinical course of dengue fever follows three stages, namely febrile stage lasting 2–7 days, the toxic stage for 24–48 h and rapid clinical recovery in the convalescent stage.^[1] Toxic stage is the most critical period in which varying degree of circulatory disturbances develop. The pathogenesis of bleeding in dengue hemorrhagic fever is multifactorial with abnormalities in coagulation cascade, platelets dysfunction, disseminated intravascular coagulation (DIC), thrombocytopenia and vascular defects. Various atypical respiratory manifestations are being seen in dengue, which includes acute respiratory distress syndrome, pulmonary edema and pulmonary hemorrhage.^[2]

Massive hemothorax, as seen in our case, has been reported only rarely worldwide. The first of three reported cases were treated with an ICD insertion which resulted in resolution of pleural effusion.^[3] The second case of dengue with pancreatitis, massive right pleural effusion with mediastinal shift was treated with ICD insertion which resulted in clinical and radiological improvement.^[4] In the third such case, an ICD was placed; however, the patient went into DIC and could not be revived due to poor hemodynamic state.^[5]

Hemothorax in the dengue fever is usually treatable by tube thoracostomy. However, a persisting opaque hemothorax on chest X-ray, a multiloculated pleural effusion on USG of the chest, and CT thorax suggestive of a collapsed lung with clotted hemothorax would necessitate surgical intervention.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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