

CASE REPORT

Pulmonary thromboembolism: A rare complication of amoebic liver abscess in a child

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Abstract

Amoebic liver abscess is common in children in developing countries due to lack of hygiene and sanitary conditions. Inferior vena cava thrombosis is a rare complication of this disease, with only a few cases reported in the literature, where this thrombus led to pulmonary thromboembolism. We report the case of a 7-year-old child with amoebic liver abscess who developed pulmonary thromboembolism and was promptly diagnosed and managed.

Case Report

A 7-year-old girl, with no previous comorbidity, presented with a 1-week history of fever and pain in the abdomen. Abdominal pain was localized to the right upper quadrant, was a dull ache in nature, was nonradiating, and had no relation to meals. There was a history of gradual upper abdominal distension, which was followed by swelling of both legs. There was no history of any breathing difficulty.

Clinical examination revealed stable vitals (HR 90/min, RR 18/min) at admission, with pallor, icterus, and bilateral pitting edema over the dorsum of the feet. Abdominal examination revealed tender hepatomegaly with liver palpable 5 cm below right costal margin. Examination of the respiratory system and other systemic examinations were unremarkable. Hematological investigations revealed anemia with neutrophilic leukocytosis and thrombocytopenia (Hb—7.2 g/dL, total leucocyte count—17 000/cm, platelets—72 000/cmm). Liver function tests revealed conjugated hyperbilirubinemia, hypoalbuminemia, and coagulopathy (serum bilirubin—2.25 mg/dL, conjugated fraction—1.45 mg/dL, serum albumin—2.1 g/dL, PT—25 s, aPTT—38 s, INR—1.75). Ultrasound abdomen revealed a large heterogenous lesion measuring 8.9 × 11.5 cm with ill-defined walls in the right lobe of the liver, in a subcapsular location, with the presence of anechoic areas within it, suggestive of liver abscess. Contrast-enhanced computed tomography (CT) abdomen revealed that the lesion was causing a mass effect on the hepatic inferior vena cava (IVC), associated with thrombus in the right hepatic vein extending to the IVC (Fig 1a & 1b). The child was initially started on intravenous antibiotics [intravenous fluid (IV) ceftriaxone, cloxacillin, and metronidazole],

stabilized with fresh frozen plasma (FFP), and was taken for urgent pigtail drainage. Approximately 50 ml of thick reddish brown purulent material was drained and sent for culture and amoebic polymerase chain reaction (PCR).

Three hours postprocedure, the child suddenly developed a worsening of tachycardia and tachypnea [heart rate (HR): 150–160/min, RR: 40/min], needing supplemental oxygen. She also had raised jugular venous pressure, fluctuating blood pressure (110/70–90/50 mmHg), cold peripheries, and crepitations of the lungs with reduced air entry. She was managed with fluid restriction and diuretics as iatrogenic fluid overload due to FFP and platelet transfusion was initially suspected. However, her condition failed to improve even after 1 h. Keeping in mind the report of baseline radiology, pulmonary thromboembolism (PTE) was then suspected, and electrocardiogram (ECG) and chest X-ray were performed. The chest X-ray revealed reduced volume of lungs, with prominent pulmonary artery. ECG revealed the classical s1q3t3 pattern. The child was immediately started on anticoagulation with unfractionated heparin and was taken for CT pulmonary angiography (CTPA). CTPA revealed a dilated main pulmonary artery (MPA—23.4 mm) with subsegmental atelectasis with volume loss in the right lower lobe (Fig 1c & d). An echocardiography was performed and revealed a structurally normal heart with mild pulmonary artery dilatation and mild tricuspid regurgitation. D-Dimer assay revealed elevated D-dimer (7113 ng/ml). Pus culture was sterile, and PCR for *Entamoeba histolytica* (primers 5'-ATGCACGAGAGCGAAAGCAT-3' and 5'-GATCTAGAAACAATGCTTCTCT-3')¹ was positive. She was managed with nasal continuous positive airway pressure (CPAP), antibiotics, inotropes (milrinone and adrenaline

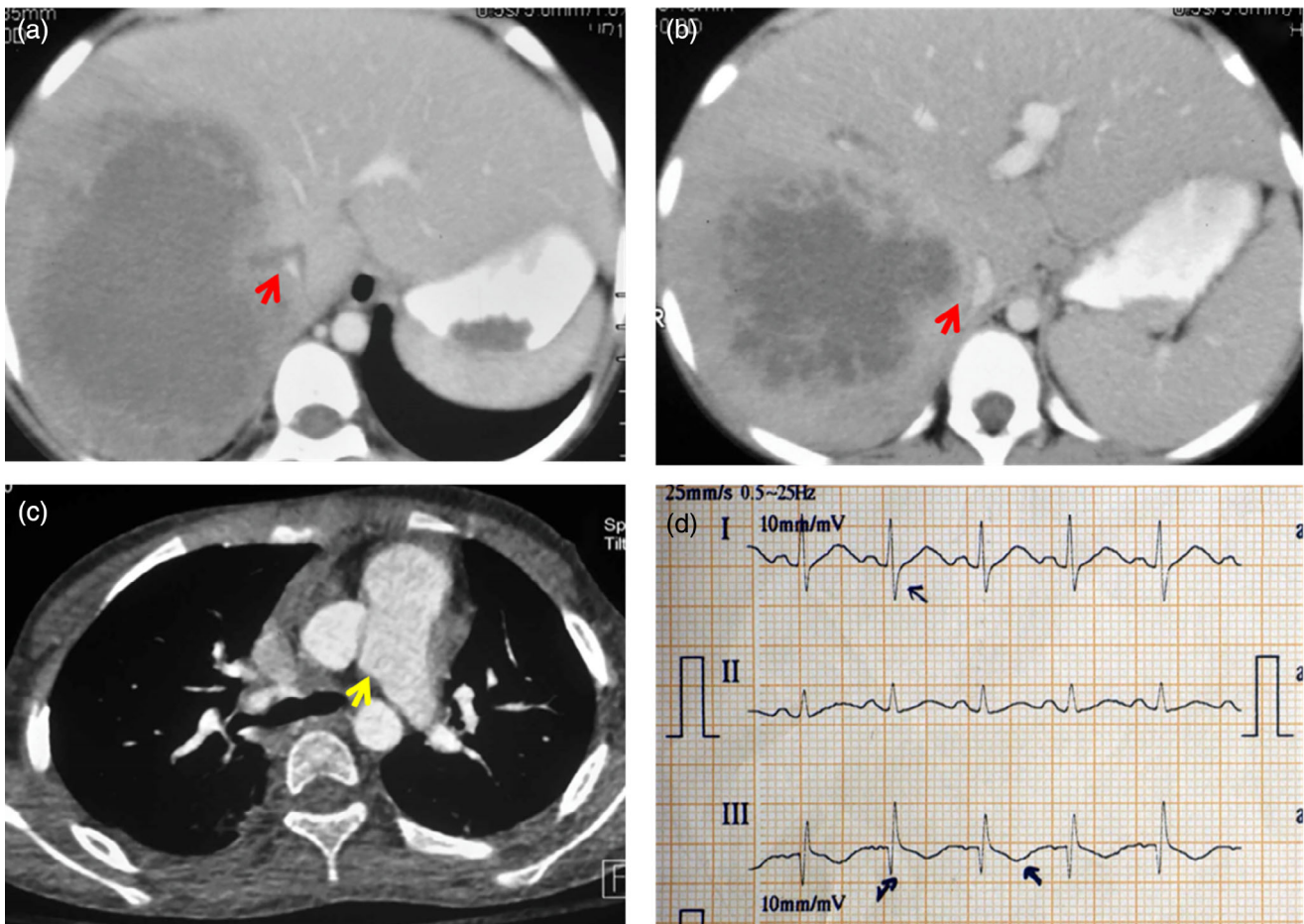


Figure 1 (a) Contrast enhanced computerised tomography (CECT) scan image showing large liver abscess seen in right lobe of liver with hypo-dense intraluminal contents seen in intrahepatic IVC (red arrow) suggestive of thrombosis, (b) patient's compressed IVC caudal to thrombus, (c) CTPA image showing dilated MPA, and (d) ECG showing s1q3t3 pattern.

infusion), and blood products for obstructive shock and anti-coagulation with low-molecular-weight heparin. Cloxacillin and ceftriaxone were stopped after 5 days, and metronidazole was continued for 14 days. The child was continued on low-molecular-weight heparin postdischarge. A procoagulant workup was planned for later because the blood transfusion had been given emergently.

Discussion

ALA is uncommon in children, and more than half of these abscesses occur in the right lobe of the liver. The liver abscess is associated with numerous complications like sepsis, empyema/pleural effusion, and rupture of liver abscess into peritoneal/pleural cavity.² IVC thrombosis is an infrequent complication of liver abscess.³ The exact pathophysiology of IVC thrombosis is not known, but it is postulated that it results from the mechanical compression of the IVC caused by the abscess, resulting in the interruption of the laminar blood flow and the consequent thrombosis.⁴ In addition, IVC thrombosis can also result as a

consequence of inflammatory cascade secondary to liver abscess.⁴ PTE is a life-threatening complication of IVC thrombosis, and there are only a few case reports⁵ of pulmonary embolism associated with liver abscess in adults. Although the CTPA did not reveal a thrombus, the MPA was dilated, and there was subsegmental atelectasis. The child was previously well with no past history of any cardiac/respiratory illness and no history suggestive of any procoagulant state.

The clinical profile, ECG findings, echocardiography, and abdominal imaging showing right hepatic vein thrombosis extending to IVC and dilated MPA on CTPA suggest that the thrombi had dislodged from IVC and lodged in the peripheral smaller branches of the pulmonary artery, causing segmental PTE. Hence, thrombus was not visualized in MPA on CTPA. To the best of our knowledge, this is the first report of a child with PTE complicating a liver abscess.

The management of complicated liver abscess causing PTE depends on the patient profile and the extent of thrombosis. Early diagnosis, timely intervention, and therapy reduces the morbidity and mortality.

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