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# Hepatic vein and inferior vena caval thrombus extending into the right atrium: a rare complication of amoebic liver abscess

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CASE REPORT

# Hepatic Vein and Inferior Vena Caval Thrombus Extending into the Right Atrium: A Rare Complication of Amoebic Liver Abscess

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## ABSTRACT

Amoebic liver abscess is an endemic in developing countries but few cases of associated vascular complications have been reported. The authors report a very rare vascular complication of hepatic veins and inferior vena caval (IVC) thrombosis extending into the right atrium in a young male with large amoebic liver abscess. Optimal result was achieved with early diagnosis on CT scan, percutaneus drainage of abscess, intravenous metronidazole, peri-operative anticoagulation, sternotomy and thrombectomy.

**Key words:** *Amoebic abscess. Vascular complications. Liver abscess. Hepatic vein. Thrombosis. Inferior vena cava thrombosis. Right atrial thrombosis.*

## INTRODUCTION

Intestinal amoebiasis is caused by the parasitic protozoan *Entameba histolytica*. This microorganism is endemic in developing countries, most often in tropical climates,[1] and is associated with unsanitary living conditions. The incidence of liver abscess with intestinal amoebiasis is reported to be between 3 and 9 percent.[2] Delay in diagnosis could be fatal and an acceptable outcome is achieved with timely diagnosis and prompt metronidazol therapy alone or percutaneous drainage in a selected group of patients. The most common complications related with amoebic liver abscess are ruptured abscess into peritoneal, pleural or pericardial cavities.[3,4] This could be due to late presentation, delay in diagnosis and initiation of therapy. There are few reported cases of hepatic veins and inferior vena caval (IVC) thrombosis.[5] The reported case required sternotomy and thrombectomy for extensive hepatic veins, inferior vena caval thrombosis with floating thrombosis in right atrium.

## CASE REPORT

A thirty two years old gentleman, computer operator by profession, resident of Karachi presented in the emergency department with three weeks history of high grade fever associated with rigors and chills. This was associated with right upper abdominal pain which was gradual in onset, moderate to severe in intensity, and continuous. He was also complaining of anorexia, weight loss and malaise. On examination he had a toxic look with tachycardia, tachypnia and fever of 38°C. The abdomen was tender in the right hypochondrium, air entry was decreased in the right lower lung zone and the rest of the examination was unremarkable. Laboratory investigations showed WBC of $25x10^9$ with 80 percent neutrophils and total bilirubin of 1.9 mg/dl. Deranged liver enzymes coagulation and renal profile were within normal range. The chest X-ray showed an elevated dome of the right diaphragm but no evidence of pneumoperitoneum. An ultrasound of the upper abdomen revealed a huge liquefied abscess cavity of 10x7x4 cm containing about 1000 ml of pus in the right lobe of the liver. The abscess cavity was abutting IVC with the possibility of hypo echogenic lesion in the inferior vena cava (Figure 1). Urgent ultrasound guided percutaneous aspiration and drainage of abscess was performed, leaving a 12 F pigtail catheter in place. About 500 cc of blood stained pus was drained. The patient's condition improved within six hours of drainage of pus. Computer tomography (CT) revealed a large abscess

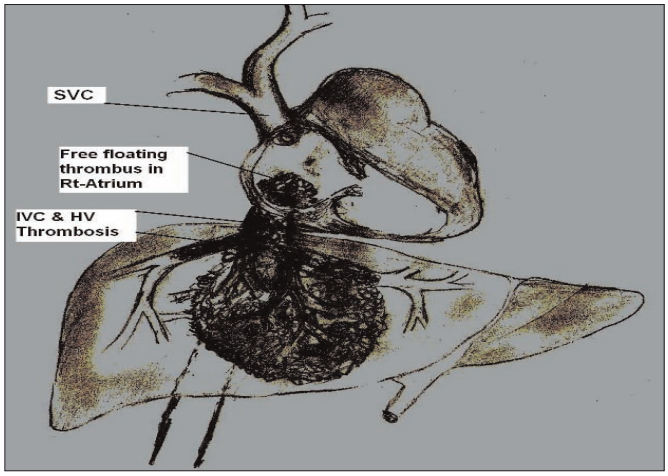


**Figure 1:** IVC and Hepatic vein thrombosis.

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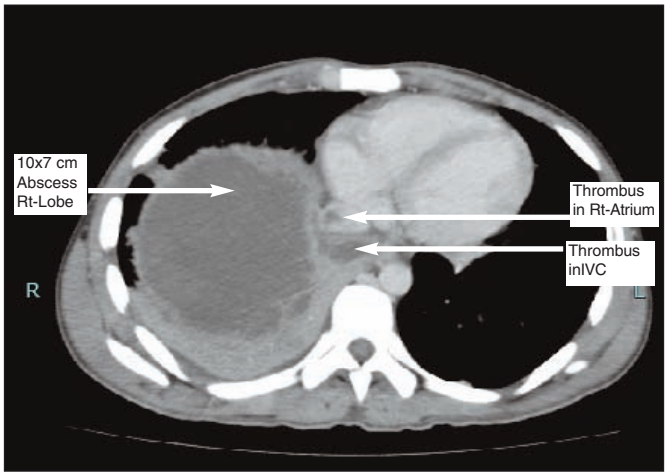


**Figure 2:** CT scan shows large abscess Tr-lobe of liver with IVC thrombosis wxtending into Rt-atrium.

cavity, abutting the inferior vena cava and also pushing the right diaphragm upwards (Figure 2). The thrombus was visible in the hepatic veins, inferior vena cava and floating thrombus extending into the right atrium. The echocardiogram also showed the same thrombus in the right atrium. Prompt therapeutic intravenous heparin therapy was initiated. As the thrombus was free floating, there was every possibility of massive pulmonary embolism despite adequate anticoagulation. After consultation with a cardiologist and cardiothoracic surgeon, a decision was made for emergency sternotomy. By open cardiac bypass operation complete removal of thrombus from right atrium, IVC and hepatic veins was achieved. The patient was continued on intravenous heparin therapy peri-operative and in post-operative days. The post-operative recovery was uneventful and he was discharged home on oral metronidazole and therapeutic warfarin sodium on the 3rd operative day. He was subsequently followed in the clinic with a repeat ultrasonogram of the liver with no reported recurrence of IVC and right atrium thrombus formation. The patient was advised to continue oral therapeutic warfarin sodium for a period of 6 months.

## DISCUSSION

Amoebiasis is an infection by the intestinal protozoan Entamoeba histolytica. About 90% of the infections are asymptomatic and the remaining 10% have a spectrum of clinical syndromes ranging from dysentery to abscess of the liver and rarely involve other organ systems.[6] Amoebic liver abscess is the most common extra luminal manifestation of Entamoeba histolytica. In spite of the availability of the highly effective drug (Metronidazole) to treat an amoebic liver abscess, complications are frequent. Various complications associated with amoebic liver abscess include rupture into the pleural, pericardial and peritoneal cavities, vascular thrombosis and rupture into bile ducts.[7] Involvement of the hepatic veins and IVC either by direct rupture or compression or thrombosis is also described.[8] Recently, two cases of amoebic liver abscess with hepatic veins, IVC and thrombus extending into right atrium have also been reported.[9,10] The first reported case was managed conservatively with intravenous metronidazole; ultrasound guided aspiration of abscess cavity was carried out but there was no mention of anti coagulation therapy and the patient survived without any complications related with venous thrombosis. The second reported case was managed with metronidazole, aspiration of abscess and therapeutic anticoagulation therapy. The patient underwent open cardiac bypass surgery and removal of thrombus with optimal outcome. The reported mortality in amoebic liver abscess is 2-10% and Aikat *et al.*[11] critically analyzed 79 autopsy cases of amebic liver abscess and reported thrombosis of portal vein in 29% and hepatic veins in 35% of the cases. The poor prognostic factors of severe amoebic liver abscess were jaundice, anaemia, low serum albumin and complicated abscess including rupture into the peritoneal and pleural cavity. In non complicated amoebic liver abscess, excellent results were achieved with intravenous metronidazole and ultrasound guided drainage of abscess in a selected group. The manage-ment of complicated amoebic liver abscess is still evolving with controversies regarding operative treatment but most of the literature supports non-operative management to achieve a better outcome.

Ultrasound of the abdomen should be done routinely in all patients with abdominal pain and fever for diagnosis of ALA and CT scan abdomen will be required for additional information as it helps us to make timely diagnosis of complications to initiate prompt treatment. Further investigations like color Doppler study and echocardio-gram will further improve the diagnostic abilities and management strategies. In this patient prompt therapeutic anticoagulation and emergency open cardiac surgery and removal of thrombus averted the potential disaster of pulmonary embolism and the possible development of Budd-Chiari syndrome.

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