

CASE REPORT

Hepatic Vein and IVC Thrombosis in Liver Abscess*Venkatraman Indiran**Department of Radiodiagnosis, Sree Balaji Medical College and Hospital, Chromepet, Chennai - 600044 (Tamil Nadu) India***Abstract:**

Liver abscess, due to amebic or pyogenic etiology, is a relatively common cause of right upper quadrant pain in the tropical countries. Imaging techniques, serological tests, image guided interventional procedures and appropriate therapeutic regimens have significantly reduced mortality; yet the disease is associated with many complications and can be fatal if untreated. Here we describe hepatic vein and Inferior Vena Cava (IVC) thrombosis which is one of the rarer complications of liver abscess.

Keywords: Liver, Abscess, Thrombosis, Complications

Introduction:

Amebic liver abscess, a relatively common cause of right upper quadrant pain in the tropical countries, can be easily diagnosed on ultrasound if the clinical and imaging features are characteristic at the time of presentation. However the abscess may be complicated and can become fatal if untreated. Complications include rupture of liver abscess may into adjacent pleural, pericardial, peritoneal cavities and rarely into gastrointestinal tract [1]. Vascular involvement in the form of portal vein, hepatic vein and Inferior Vena Cava (IVC) thrombosis is also known to occur rarely [2].

Case Report:

A 51-year-old male presented with right upper quadrant pain and fever for 3 days. Ultrasound revealed a large hypoechoic lesion in the right lobe of liver. He had leukocytosis (21000 cells / cu.mm) and altered liver function tests (total bilirubin of 5.4 mg/dl, direct and indirect bilirubin 2.7 mg/dl, SGOT 122 U/l, SGPT 112 U/l and 240

MIU/ml). Multiphasic Contrast Enhanced Multiphasic Computed Tomography (CECT) abdomen showed a large hypodense peripherally enhancing lesion with lobulated margins measuring ~ 8 x 7 cm in the right lobe of liver. Middle hepatic vein adjacent to the medial aspect of the lesion showed hypodense content with extension into the IVC, consistent with thrombosis (Fig. 1-3). Liver abscess with middle hepatic vein and IVC thrombosis were considered. Serology for Entamoeba histolytica was positive. About 150 ml of pus was aspirated percutaneously under ultrasound guidance. Patient was treated with Injection Metronidazole 500 mg thrice and Injection Ceftriaxone 2 g daily intravenously for 1 week. Anti coagulant therapy wasn't instituted. Patient was clinically better at the end of 1 week and followup ultrasound showed reduction in abscess size and resolution of thrombosis

Discussion:

Though amoebic and pyogenic liver abscesses are commonly encountered in India, hepatic vein and IVC thrombosis secondary to liver abscess is quite rare [2]. As hepatic vein and IVC thrombosis are life threatening, it requires high clinical suspicion followed by CECT in appropriate clinical setting. Rupture of the abscess into a vascular hepatic vein / IVC, predispose to localized luminal thrombosis which may act as source of pulmonary emboli and septicemia [3, 4]. Vascular complications in hepatic abscess should be considered in patients with fever, tender liver or signs of portal

hypertension, more so in patients with diabetes. CECT is an excellent method for diagnosing hepatic abscess as well as its complications.

Syed *et al.* in their study in 2005 identified venous thrombosis was seen in 28/67 patients (42%), involving portal vein in 16/67 (24%) and hepatic vein in 15/67 (22%); 3/67 (4%) had both portal and hepatic vein thrombosis. Thrombosis is seen as non-enhancing linear structures with or without luminal expansion [5]. Maffiolo *et al.* reported a case of thrombophlebitis of the hepatic veins as a complication of a *Klebsiella* liver abscess [6]. Wi

et al. in their study of 602 cases of pyogenic liver abscesses found that the rate of complication was higher in the older age group (> 65 years) [7]. Inferior vena cava and right atrial thrombosis as a complication of pyogenic liver abscess has also been reported [8, 9].

Liver abscess caused by hypermucoviscous strains of *Klebsiella pneumoniae* is associated with thrombophlebitis of portal and hepatic veins. A retrospective study of 169 subjects with *Klebsiella* liver abscess to assess its natural history and role of anticoagulation found incidence of

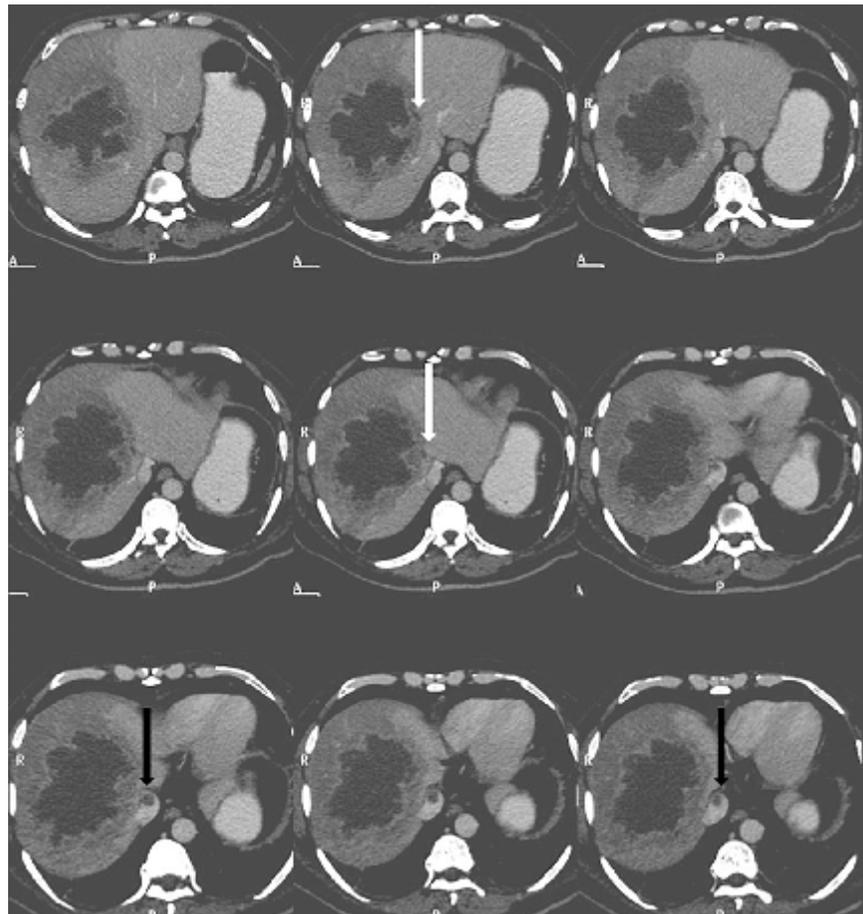


Fig. 1: Axial CECT Abdomen Images showed a Large Hypodense Peripherally Enhancing Lesion with Lobulated Margins in the Right Lobe of Liver. Middle Hepatic Vein Adjacent to the Medial Aspect of the Lesion Showed Hypodense Content (White Arrow) with Extension into the IVC (Black Arrow), Consistent with Thrombosis

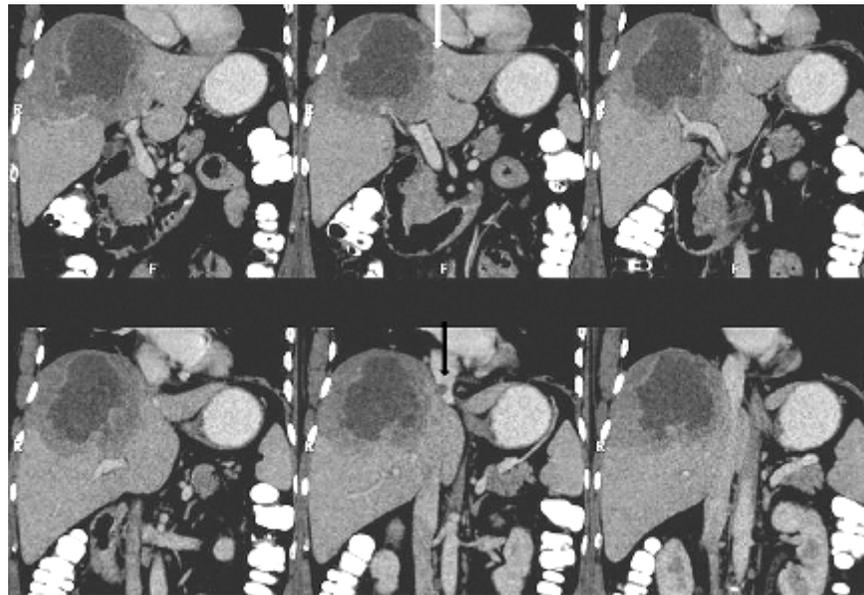


Fig. 2: Coronal CECT Abdomen Images showed a Large Hypodense Peripherally Enhancing Lesion with Lobulated Margins in the Right Lobe of Liver. Middle Hepatic Vein Adjacent to the Medial Aspect of the Lesion Showed Hypodense Content (White Arrow) with Extension into the IVC (Black Arrow), Consistent with Thrombosis

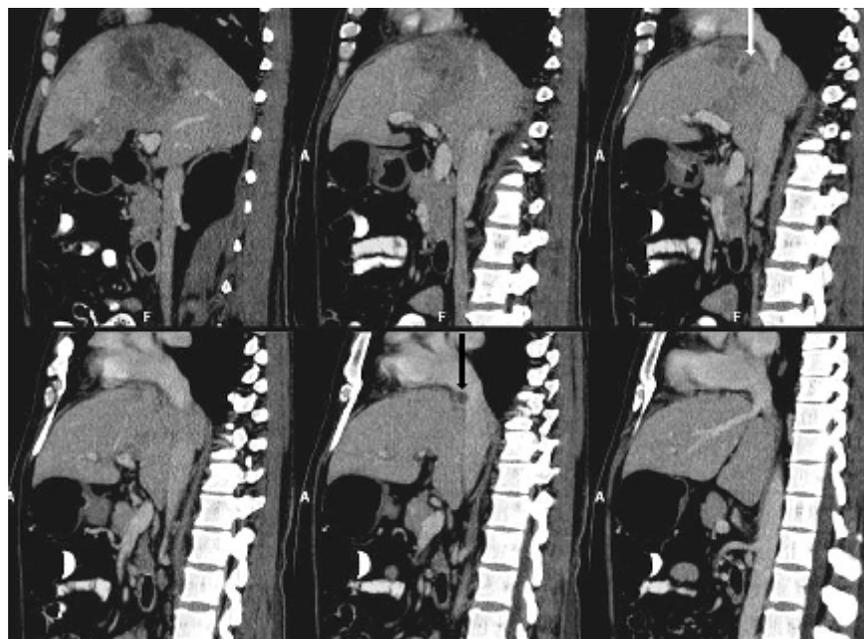


Fig. 3: Sagittal CECT Abdomen Images showed a Large Hypodense Peripherally Enhancing Lesion with Lobulated Margins in the Right Lobe of Liver. Middle Hepatic Vein Adjacent to the Medial Aspect of the Lesion showed Hypodense Content (White Arrow) with Extension into the IVC (Black Arrow), Consistent with Thrombosis

thrombophlebitis to be 31.4%. Though only one patient received therapeutic anticoagulation, almost 73 % of those showed abscess resolution, improvement or recanalization of vessels [10].

Sonography may also be helpful in detection and characterization of venous extension, especially for follow-up. Echocardiography is useful in assessment in cases of intracardiac extension. Treatment includes conservative management with antibiotics, single time aspiration and catheter drainage of liver abscesses [2]. Therapeutic anticoagulation is not very essential as abscess resolution improves recanalization of thrombosed

vessels. When transluminal interventional treatment such as filter insertion or venoplasty is considered, venography is important.

Conclusion:

Whenever a liver abscess is seen adjacent to a vascular channel or in the caudate lobe, it is imperative for the radiologist to look for vascular complications, as venous involvement may not be very symptomatic in some cases. Treatment of the abscess improves the recanalization of thrombosed vessels even without anticoagulation.

References

1. Lee KW, Kim HY, Kim CW, Kim YK, Kwon O, Kim MA *et al.* Hepatogastric fistula as a rare complication of pyogenic liver abscess. *Clin Mol Hepatol* 2017; 23(1): 87-90.
2. Lal H, Thakral A, Sharma ML, Kumar T. Liver abscesses with venous extension- rare complication of a common problem. *Turk J Gastroenterol* 2014; 25 (Suppl 1): 223-8.
3. Sarda AK, Mittal R, Basra BK, Mishra A, Talwar N. Three cases of amoebic liver abscess causing inferior vena cava obstruction, with a review of the literature. *Korean J Hepatol* 2011; 17(1): 71-5.
4. Sodhi KS, Ojili V, Sakhuja V, Khandelwal N. Hepatic and inferior vena caval thrombosis: vascular complication of amebic liver abscess. *J Emerg Med* 2008; 34(2):155-157.
5. Syed MA, Kim TK, Jang HJ. Portal and hepatic vein thrombosis in liver abscess: CT findings. *Eur J Radiol* 2007; 61(3): 513-9.
6. Maffiolo C, Novellas S, Chevallier P, Brunner P, Mourou MY, Bruneton JN. Thrombophlebitis of the hepatic veins: complication of a Klebsiella liver abscess. *Clin Imaging* 2006; 30(1): 63-5.
7. Wi JW, Cho EA, Jun CH, et al. Clinical characteristics and outcomes of pyogenic liver abscess in elderly Korean patients. *Korean J Gastroenterol* 2015; 66(1): 27-32.
8. Bagri N, Yadav D, Hemal A. Inferior vena caval and right atrial thrombosis: complicating pyogenic liver abscess. *Indian Pediatr* 2013; 50(7): 701-3.
9. Nayak HK, Kumar K, Saraswat VA, Pandey G, Mohindra S, Singh A. An unusual complication of pyogenic liver abscess. *J Clin Exp Hepatol* 2016; 6(4): 337-38.
10. Molton JS, Chee YL, Henedige TP, Venkatesh SK, Archuleta S (2015) Impact of Regional Vein Thrombosis in Patients with *Klebsiella pneumoniae* Liver Abscess. *PLoS One* 10(10): e0140129.

***Author for Correspondence:** Dr. Venkatraman Indiran, Department of Radiodiagnosis, Sree Balaji Medical College and Hospital, 7 Works Road, Chromepet, Chennai-600044, Tamil Nadu
Email: ivraman31@gmail.com Cell: 09443067358