



CASE REPORT

MDCT imaging findings in spontaneous rupture of hepatocellular carcinoma: A classical case report.

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Abstract

Abstract: Hepatocellular carcinoma (HCC) is the most common primary malignant tumor of liver and has a tendency to bleed and rupture spontaneously which is potentially life threatening. HCC's which are located in the periphery are more likely to rupture due to tear in the feeding artery and can further lead to intraperitoneal hemorrhage. CT scan is one of the first and accurate imaging modality to diagnose ruptured HCC with signs of rupture like, surrounding perihepatic hematoma, intraperitoneal hemorrhage, active extravasation of contrast materials, and enucleation sign. In this case report, we are discussing the manifestation and CT findings of a classical case of ruptured HCC.

Keywords: HCC, rupture, CT scan

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1 | INTRODUCTION

Hepatocellular carcinoma, commonly abbreviated as HCC is the most common malignant liver tumor in adults. Common risk factors for HCC includes alcoholic cirrhosis, hepatitis B & C viruses, hemochromatosis, wilson disease, etc. Spontaneous rupture of HCC rarely occurs, and ruptured HCC with intraperitoneal hemorrhage can be life threatening (1).

Patients with ruptured HCC commonly present in the emergency department with abdominal pain. Ultrasound and CT scan are generally the first investigation ordered in a known case of HCC presenting with acute abdominal pain. The CT findings includes hemoperitoneum, hematoma in perihepatic region,

contrast extravasation, capsular irregularity at some places. Patients with large tumor size, increased vascularity, and portal vein thrombosis, are at higher risk for subsequent rupture (2).

We are reporting a case of a patient with spontaneous rupture of advance stage HCC, presented to the emergency department with acute abdominal pain.

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MDCT IMAGING FINDINGS IN SPONTANEOUS RUPTURE OF HEPATOCELLULAR CARCINOMA: A CLASSICAL CASE REPORT.

2 | CASE REPORT

A 58-year-old male with a medical history of hypertension and diabetes mellitus type 2, osteoarthritis with HCC in a background of chronic liver disease diagnosed 6 years back and had started chemotherapy. He presented to the emergency department with acute abdominal pain in the right hypochondrium, loose motions, vomiting and dizziness. Symptoms kept on worsening by morning. Vitals of the patients were, blood pressure of 100/60 mmHg, pulse rate of 112 beats/min, respiratory rate of 16 breaths/min, and oxygen saturation of 96% in room air. Physical examination showed tender right hypochondrium with normal bowel sounds. Hemoglobin was 9.2 at admission which fell to 6.8 gm the next day. Alpha-fetoprotein (AFP) level was 1800 ng/mL. Ultrasound whole abdomen showed a mass of 11 × 8 cm mass in the left lobe with perihepatic and pelvic collection. In a known case of HCC with background of CLD, ultrasound findings were largely inconclusive. Triple phase abdominal computed tomography (CT) was planned and showed lesions corresponding to HCC in segment 7 and left lobe of liver[fig.1]. Capsular irregularity was noted in left lobe lesion. Dependent hyperdensity s/o hemorrhage was seen in right perihepatic, paracolic space and a hematoma in pelvis was found[fig.2]. Based on the clinical scenario and dynamic CT findings, suspicion of spontaneous rupture of HCC was raised. Seeing the deteriorating condition of the patient, he was shifted to cath lab where contrast extravasation from one of the branch of common hepatic artery supplying the tumor in the left lobe was confirmed[fig.3]. Hemostasis was achieved by transarterial embolization. The patient was stable on follow up.

Discussion: HCC is regarded as one of the most common primary malignant tumor of the liver and one of the most prevalent malignant cancer in the world, killing up to 1.25 million persons annually. It is also known to cause third most common cause of cancer-related death worldwide. It has a male:female ratio of 5:1, with a peak incidence in the fourth decade in endemic areas. Patients with known case of HCC with acute abdomen can be alarming for the clinicians and raises the possibility of rupture. The acute onset of abdominal pain is the common-

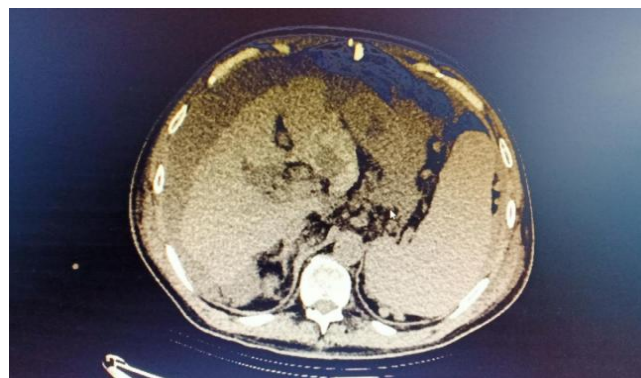


Fig. 1: a

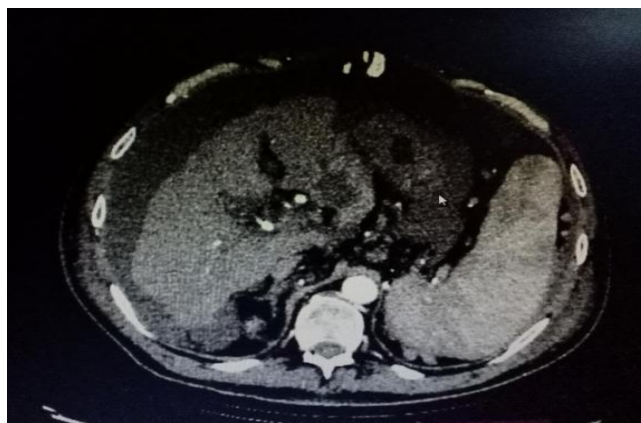


Fig. 1: b

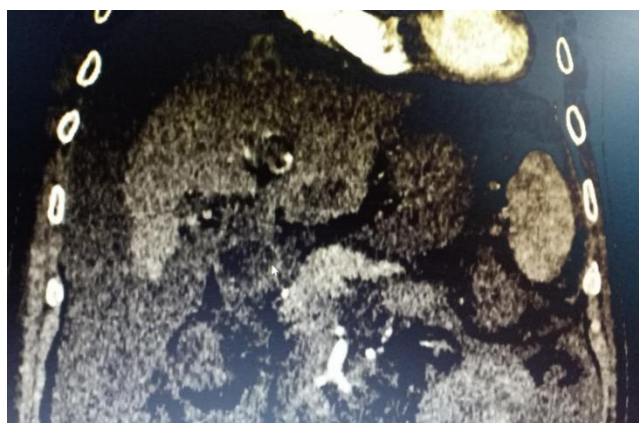


Fig.1: c

Figure 1(a,b,c): Axial image NCCT(1a) axial and coronal image in arterial phase(1b and 1c) image showing HCC with mild internal hyperdensity in left lobe of liver.

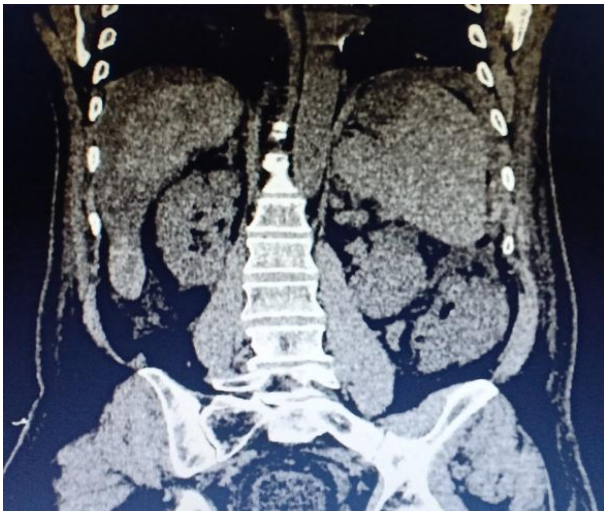


Fig. 2: a



Fig. 2: b

Fig 2(a and b): Coronal and axial NCCT images showing mild dependent hyperdensity representing hemorrhage in perihepatic fluid.

est symptom in most of the people, followed by shock. The hemorrhagic complication of HCC can vary from minor intrahepatic bleeding, progressing to subcapsular hemorrhage and can rupture through the hepatic capsule causing intraperitoneal hemorrhage. Spontaneous rupture of HCC can manifest as sudden onset of right hypochondrial pain due to acute distention of the Glisson capsule. Choi et al, described enucleation sign, which is owing to a non-enhancing low attenuating lesion with peripheral rim enhancement and focal discontinuity of the hepatic surface during the arterial phase (3–7). In our patient



FIGURE 3: DSA image showing contrast leak from branch of common hepatic artery(CHA) supplying the left lobe HCC.

there was mild capsular irregularity in the left lobe lesion, no obvious capsular rupture was seen.

There are several proposed mechanism of rupture of HCC which includes, rapid tumor growth, venous hypertension, trauma, compression by respiratory movements of diaphragm, coagulopathy and thrombocytopenia. Friable superficial feeding artery, superficially located laceration or tear can cause rupture. Bleeding from a laceration in a superficially located tumor secondary to minimal trauma, caused either by an external event or from normal respiratory movement, especially for tumors situated under the right hemidiaphragm. HCC can cause occlusion of branches of hepatic veins leading to increase in intratumoral pressure which can further cause central necrosis of tumor and coagulopathy leading to rupture. HCC rupture may be related to vascular dysfunction, for example, vessel dysfunction caused by the degenerations of elastin and type IV collagen can make the blood vessels weak and stiff leading to rupture in conditions of increased blood pressure and minimal trauma (8, 9). In our case the bleeder was found in the left lobe lesion which was subcapsular in location which was relatively stable in size since last

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study. The patient had mildly deranged coagulation profile and there was no history of trauma.

HCC rupture usually accompanies hemoperitoneum, which is most evident on non-enhanced CT scans. Highest-attenuating hematomas are usually located closest to sources of bleeding on CT scans, whereas lower-attenuating unclotted blood are located farther from bleeding sites. CT is useful for detecting HCC, defining its location and boundary, determining the presence of bleed, and showing serial hematoma density changes. An active arterial extravasation of contrast material can be differentiated from clotted blood, as the CT attenuation values of extravasated contrast materials are significantly higher than those of clotted blood. Hepatic angiography, on the other hand can demonstrate real time extravasation of contrast material from tumors in patients with a ruptured HCC (7, 10).

The preferred treatment for ruptured HCC are surgery and/or transarterial embolization techniques (11). In our case patient was successfully managed by transarterial embolization.

Conclusion: Dynamic CT is the modality of choice for making a diagnosis of a ruptured HCC with findings on dynamic CT include perihepatic hematoma, intraperitoneal hemorrhage, active extravasation of contrast materials, focal discontinuity of the hepatic surface and enucleation sign.

Sponsorship: None

Conflict of interest: None

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