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Case Report

Paracaval lipoma: Case study and literature review

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ABSTRACT

Paracaval lipoma refers to a fatty tissue collection surrounding the intrahepatic portion of the inferior vena cava (IVC). It is a relatively infrequent benign finding on abdominal CT imaging, speculated to be a result of negative thoracic pressure on the IVC during inspiration. If not recognized, paracaval lipoma can be confused for thrombus or, worse yet, malignant invasion of the IVC, resulting in a costly and unnecessary workup. Here we describe a 51-year-old white male presenting to our institution with a 2-week history of abdominal pain, increasing abdominal girth, jaundice, and ascites; subsequent CT of the abdomen and pelvis without contrast revealed an incidental finding of fat deposition around the caudate lobe with a juxtacaval distribution, consistent with paracaval lipoma.

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Introduction

Often times, incidental findings are made on routine diagnostic imaging. Guidelines exist to help classify and guide management of incidentalomas discovered on imaging, including the Bosniak classification for renal cystic masses [1]. An example of an incidental finding that is important to acknowledge is a paracaval lipoma. Also known as juxtacaval lipomatosis, paracaval lipoma refers to fat accumulation encasing the intrahepatic portion of the inferior vena cava (IVC). While benign, paracaval lipoma on imaging can mimic a neoplasm or thrombus. Proper identification and classification of this radiographic finding is essential to avoid an expensive and futile workup.

Case report

A 51-year-old white male presented with a 2-week history of worsening jaundice, increasing abdominal girth, and fatigue. Past medical history was pertinent for Crohn's disease and hypertension. Review of systems was negative for any other signs or symptoms. The patient admitted to a previous history of regular alcohol consumption (2 alcoholic beverages a night), but denied any use for the past 25 years. He also denied drug or tobacco abuse. Initial workup included a chronic liver disease panel, which showed an elevated ferritin, concerning for hemochromatosis. Imaging evaluation included a CT without contrast of the abdomen and pelvis which showed moderate pelvic ascites, diffuse hepatic cirrhosis, and fat deposition around segment 1 of the liver in a juxtacaval distribution (Fig. 1). The patient was treated for his ascites; however, his hospital course was complicated by worsening ascites, hepatorenal syndrome, and bowel necrosis. The patient eventually expired despite aggressive treatment with pressors, hemodialysis, and exploratory laparotomy. Despite the

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Fig. 1 – Frontal view CT showing fat collection surrounding the intrahepatic portion of inferior vena cava, as it passes posteriorly to the caudate lobe of the liver. Note the hypodense appearance of the surrounding fat.



Fig. 2 – Axial view CT. Note the fat deposition occurring in an anteromedial pattern, with no intraluminal invasion.

patient's outcome, the incidental fatty collection found on imaging was recognized as benign and did not alter his treatment course.

Discussion

Miyake et al. (1992) project the incidence of paracaval lipoma for patients receiving CT scans to be at approximately 0.5% [2]; however, the incidence in chronic liver disease patients undergoing CT scan appears to be considerably higher, approximating 26% [3]. In this population, the juxtacaval fat deposition pattern will often occur posterior to the intrahepatic portion of the IVC, but has also been reported to occur anteromedially, as in our patient (Fig. 2). One postulation to the increased incidence of paracaval fat deposition in this specific group is due to right hepatic lobe atrophy, leading to increased pericaval space [4]. Previous articles have reported fat collection occurring both distinctly outside and surrounding the IVC (Fig. 3), as well as intraluminally [5]. Additional studies done by Han et al. (1997) demonstrated that fat lesions appearing to occur intraluminally within the IVC were due to anatomic variations, resulting in angulation and narrowing of the subdiaphragmatic IVC. Furthermore, they suggest that the use of coronal CT im-

ages to more accurately categorizes the fatty deposition as being distinct from the IVC [6].

Lipoma on CT imaging displays a distinctive hypodense appearance with negative attenuation values (–10 to –300 HU), suggestive of uniform fat density. Multidetector CT is appropriate for identification and classification of questionable fat containing lesions, such as those that are large or resemble a fatty tumor [6]. Differential diagnosis for pericaval fat collection may include liposarcoma, IVC thrombus, and hepatocellular carcinoma. In contrast to fat, liposarcoma will appear more heterogeneous with areas of attenuation ranging from –20 to +20 HU on CT. Liposarcoma can also present with areas of calcification and may be shown infiltrating nearby structures [7]. Also, the presence of thick septations (>2 mm) and/or nodularity is more characteristic of liposarcoma vs. lipoma [8]. IVC bland thrombi will appear as a true intraluminal filling defect with no invasion of liver parenchyma. Although paracaval lipoma can prove problematic due to the apparent filling defect caused by the associated fat accumulation, the use of MRI and reformatted CT imaging can help differentiate from true thrombi formation [9]. Hepatocellular carcinoma appears as a heterogeneous mass with varying amount of calcification and necrosis. Similar to liposarcoma, hepatocellular carcinoma has the ability and propensity to invade nearby structures. As seen in this case, the fatty collection occurring distinctly outside the IVC is an important prognostic factor that



Fig. 3 – Sagittal view CT, with both the posterior and anterior inferior vena cava involved. Note the fat collection occurring extraluminally.

can help assure benignity. In addition, lipomas are not known to undergo malignant transformation.

Although extremely rare, clinical implications of extravascular lipoma include venous compression. To date, there are three reported cases of such a lipoma causing compressive symptoms, including a case leading to common femoral vein obstruction [10]. However, there are no such reports of paracaval lipoma leading to IVC compression.

In conclusion, paracaval lipoma is a relatively rare finding that seems to be associated with chronic liver disease. It displays a characteristic CT finding of fat collection that can occur posterior and/or anteromedial to the intrahepatic portion of the IVC. It can be recognized as a hypodense region with negative attenuation values. It can occur distinct from and surrounding the IVC as well as intraluminally. It is an infrequent but important benign finding to recognize to avoid a potentially costly diagnostic workup.

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