**Type**: Case Report

**Title: A Case of Inflammatory Pseudotumor of the Liver Mimicking Metastatic Disease: A Diagnostic Challenge**

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**Introduction:**

Inflammatory Pseudotumor (IPT) is a rare benign tumor that can develop in various organs but is commonly seen in lung and orbit. An IPT of the liver (IPTL) is a rare condition and can mimic malignant tumors of liver such as cholangiocarcinoma, hepatocellular carcinoma or metastases. It is characterized by chronic infiltration of inflammatory cells and an area of fibrosis. Precise etiology of IPTL remains unclear but few theories showed significant inflammatory effect of the biliary steroid lithocholic acid is a major contributor in the formation of those benign lesions in the liver. Patients usually present with fever, abdominal pain and jaundice although some patients can be asymptomatic. There are no specific laboratory or radiologic findings that are useful at diagnosing IPTL, it is mostly diagnosed after liver biopsy and is diagnosis of exclusion. We describe a rare case of IPT of the liver initially considered to be metastasis in a patient with history of renal malignancy.

**Case Report:**

A 65-year-old gentleman with past medical history of COPD, Hepatitis C and partial nephrectomy done three years prior to presentation for T1bN0M0 renal cell carcinoma (RCC) (Image 1 showing the RCC before surgery) was seen in Medicine clinic for intermittent moderate right upper quadrant abdominal pain and nausea since a month. Pain is not associated with food or bowel movements. He had no night sweats, fever, vomiting, and change in bowel habits, weight loss and jaundice. Review of systems was otherwise unremarkable. Family history was significant for brain tumor in his mother. Social history significant for tobacco abuse with 1 PPD and occasional alcohol use. Vital signs were normal and a complete physical exam was normal with no stigmata for chronic liver disease.

Given prior history of RCC as well as Hepatitis C, screening imaging was obtained at that time. CT of the chest showed two stable sub-centimeter lung nodules, which were present for two years and remained unchanged. CT of the abdomen and pelvis revealed new multiple well defined large heterogeneous solid masses in the liver suspicious for metastatic disease (Image 2) or HCC.

Pt was referred to oncology clinic given concern for HCC. Initial serum alpha fetoprotein (AFP) level was significantly elevated at 5960 mcg/ml, Hepatitis B, cytomegalovirus and HIV were negative. Our patient underwent ultrasound (US)-guided percutaneous biopsy of one of the liver lesions and pathology reported liver tissue with marked foam cell and inflammatory cell infiltrate as well as portal, periportal and sinusoidal fibrosis. No metastatic renal cell or hepatocellular cancer cells were seen. Given concern for missed malignancy, US-guided percutaneous biopsy was repeated in one month and pathology again showed similar findings without evidence of malignant cells. Patient’s case was discussed in the multidisciplinary tumor board meeting and imaging was reviewed with the consensus recommendation to proceed with laparoscopic biopsy of the liver lesions in order to establish a definite diagnosis.

In preparation for laparoscopic liver biopsy after two months of initial U.S guided biopsy, the surgeon had ordered an MRI of the abdomen as well as repeat AFP levels. Repeat imaging (Image 3) again revealed multiple indeterminate masses in the liver, however these were now significantly smaller compared to the previous CT liver from a year ago. AFP level was normal (1.7 mcg/ml). Given this unexpected interval decrease in the size of the masses as well as 2 biopsies without evidence of malignancy, the diagnosis of IPTL was made and he was managed conservatively. Subsequent imaging done three and six months (Image 4) later showed further decrease in size of the liver lesions and AFP levels remained normal. Patient condition remained satisfactory.

**Image 3**: The axial T2 weighted image of the MRI abdomen performed prior to the planned laparoscopic biopsy shows interval significant decrease in size of the heterogeneous solid mass (from 10.3 x 9.5 cm to 6.6 x 4.8 cm in 3 months) in the inferior aspect of the right lobe of liver. Multiple simple cysts are again seen in the liver.

Image 3B: Follow up CT abdomen after 6 months shows that the solid mass in the inferior aspect of the right lobe of liver has significantly decreased in size. Other solid masses in the remaining liver also decreased in size (not shown here).

**Image 4**: Follow up CT abdomen after 6 months shows that the solid mass in the inferior aspect of the right lobe of liver has significantly decreased in size. Other solid masses in the remaining liver also decreased in size (not shown here).

**Discussion:**

IPTL is a rare benign tumor and is more common in non-European population. IPTL most often occurs in childhood and early adulthood with female predominance. Patients can be clinically asymptomatic or present with nonspecific symptoms such as fever, weight loss, abdominal pain and jaundice. In severe cases IPTL, may lead to biliary obstruction, portal hypertension, portal vein thrombosis, cirrhosis, and eventually hepatic failure. On imaging, it can present as a single or multiple lesions and can mimic primary liver malignancy or metastatic disease. Microscopically, IPTL is characterized by polymorphous inflammatory cell infiltrate (lymphocytes, plasma cells, and histiocytes), myofibroblastic spindle cells with fibrosis, necrosis, and granulomatous reaction.

IPTs are most likely inflammatory but can be due to trauma, infection, vascular or autoimmune disorders and may require treatment with anti-inflammatory agents, antibiotics and steroids. Given the difficulty in differentiating IPTL from malignant tumors a definitive diagnosis of IPTL can be made only by biopsy but the risk of a biopsy-related complications should be considered before proceeding. Based on literature the management of IPTL is controversial. Surgical resection is considered safer in patients with severe symptoms or high concern for malignancy prior to definitive diagnosis of IPTL has been made as it minimizes biopsy-related complications and recurrence of IPTL.

**Conclusion:**

In conclusion, recognizing IPTL as rare, benign tumor and differentiating it from HCC or metastasis (through biopsy) helps to avoid unnecessary hepatectomies. IPTL frequently resolves spontaneously or with conservative treatment with a good prognosis but with the risk of recurrence. In contrast, after partial hepatectomy in patients with severe symptoms or uncertain diagnosis, IPTL recurrence is minimal (the incidence of IPTL was 0.7%) and showed no increase in mortality.

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