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Enlarging Liver Mass: Inflammatory Pseudotumor in a Patient With Polymyalgia Rheumatica

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Abstract

Inflammatory pseudotumors of the liver are rare, non-neoplastic liver tumors. Due to the nonspecific clinical presentation, imaging features, and histopathological findings, they can mimic malignant tumors requiring invasive diagnostics. We present a case of a 61-year-old female patient with a history of type 2 diabetes mellitus, hypothyroidism, hyperlipidemia, and polymyalgia rheumatica who had initially presented with abdominal pain for 3 weeks. Further workup showed normal liver chemistries and tumor markers: AFP and CA 19-9. Magnetic resonance imaging (MRI) of the abdomen showed a segment 6 lesion measuring 4.1 $\times$ 4.0 $\times$ 3.7 cm. A liver biopsy then confirmed the diagnosis of an inflammatory pseudotumor of the liver with negative IgG4. On follow-up imaging, a rapid growth of this liver lesion was noted. Laparoscopy was done but did not show any distinct liver lesion. Follow-up imaging confirmed a decrease in the size of the mass. Interestingly, the patient had been on a higher dose of steroids for her polymyalgia rheumatic leading up to the follow-up imaging. This is the first case of an inflammatory pseudotumor of the liver in a patient with polymyalgia rheumatica. With this case, we would like to increase the awareness for inflammatory pseudotumors of the liver as a differential diagnosis of liver lesions in patients with underlying autoimmune disorders.

Keywords

liver mass, polymyalgia rheumatica, autoimmune disease

Introduction

Hepatic inflammatory pseudotumors (IPT) were first described in 1953 by Pack and Baker.[1] Inflammatory pseudotumors of the liver are rare, non-neoplastic benign liver tumors.[2] They account for 8% of extrapulmonary IPTs.[3]

Case Presentation

We present a case of a 61-year-old female patient with a past medical history of type 2 diabetes mellitus, hypothyroidism, hyperlipidemia, and polymyalgia rheumatica who was initially seen for right upper quadrant pain for 3 weeks. The pain was nonradiating, unrelated to food, and had been constant without any alleviating or worsening factors. She denied any associated symptoms such as weight loss, jaundice, fever, chills, nausea, vomiting, and any change in her bowel habits. No recent travel or sick contacts were reported. Medication history included levothyroxine, metformin, rosuvastatin, vitamin D, and prednisone (2.5 mg), which she had been tapering down recently. Family history was negative for liver disease and social history negative for alcohol or illicit drug use.

Physical examination, including abdominal examination, was benign. Body mass index (BMI) was 26.4. Laboratory data showed a hemoglobin of 13.8 g/dL, platelets of 361 $\times$ 10^3, white blood cell (WBC) of 12.6, sodium of 141 mmol/L (136-145), creatinine of 0.7 mg/dL (0.5-1.3), thyroid stimulating hormone (TSH) of 1.218 mIU/mL (0.350-5.5), HbA1c of 7.9% (3.6-6.9), alkaline phosphatase (ALP) of 99 μ/L (46-116), aspartate transaminase (ALT) of 19 μ/L (4-36), aspartate aminotransferase (AST)

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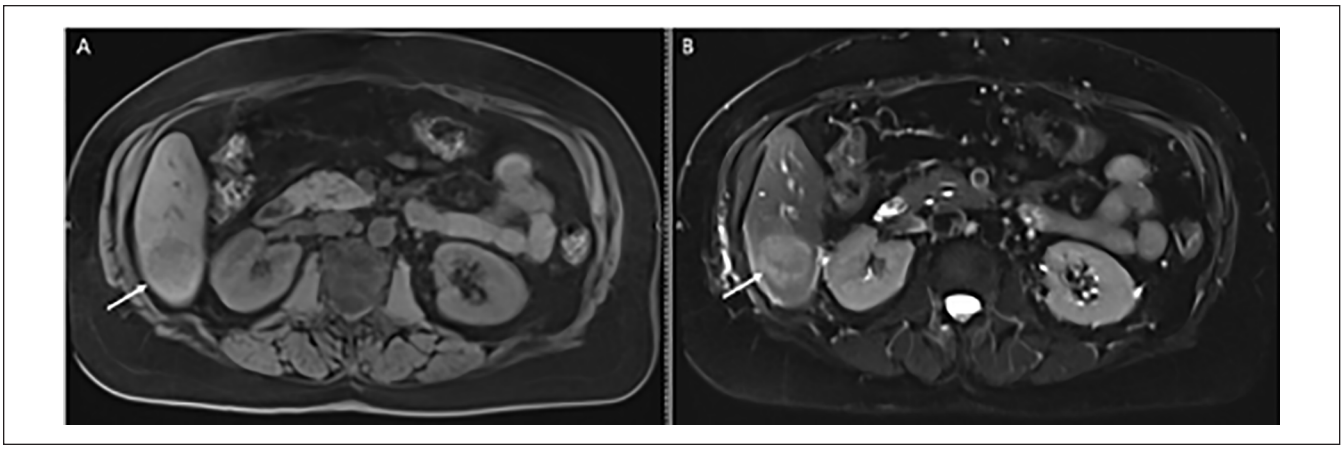

Figure 1. Axial unenhanced (A) T1-weighted and (B) T2-weighted images of the abdomen with fat saturation demonstrate a round lesion within hepatic segment 6; the lesion is hypointense on T1-weighted and hyperintense on T2-weighted images (white arrows).

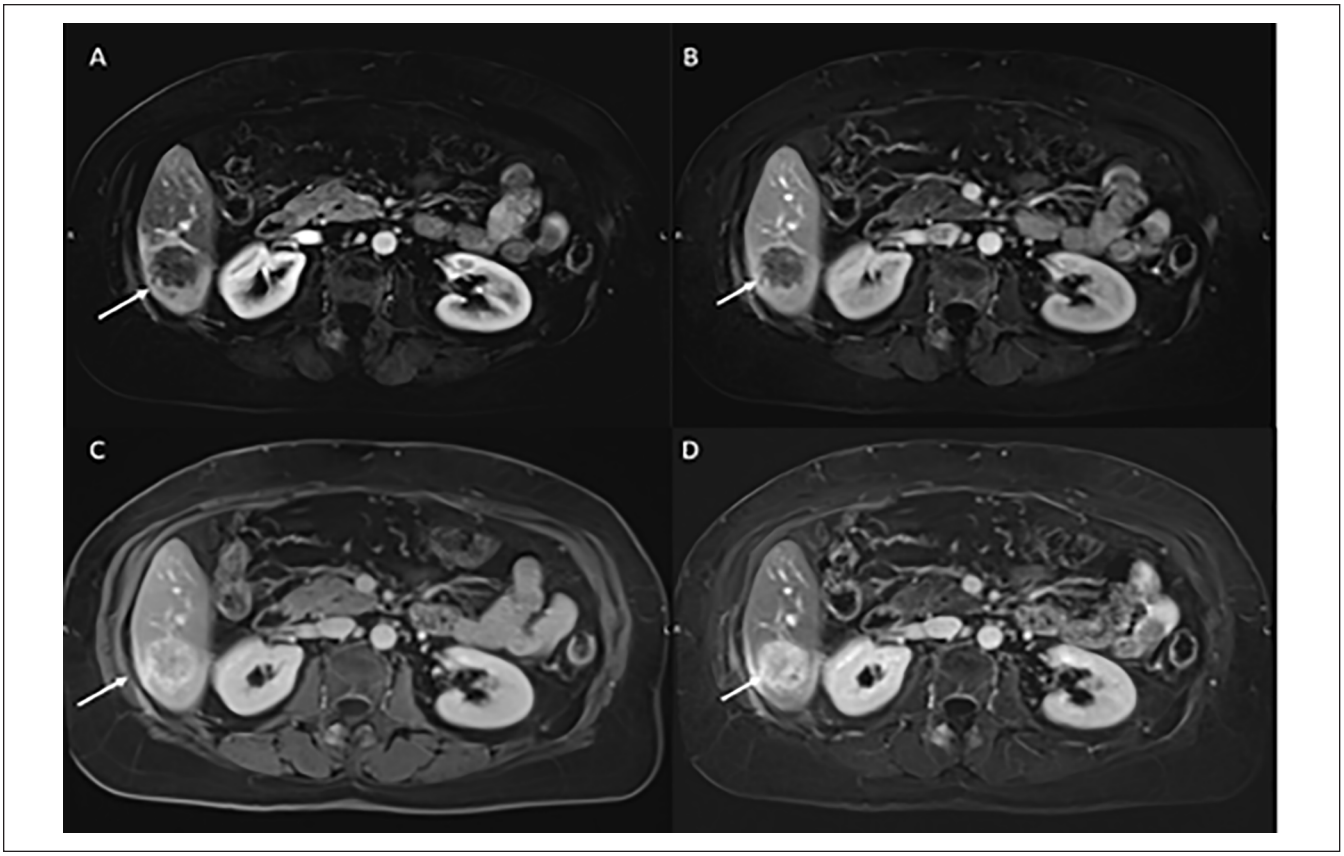

Figure 2. Axial gadolinium-enhanced T1-weighted images with fat suppression during (A) arterial, (B) venous, (C) 3-minute delay, and (D) 5-minute delay phases demonstrate a gradually enhancing heterogenous lesion (white arrows). The lesion demonstrates initial rim enhancement with uninterrupted central filling and no washout with time.

of 25 μ/L (8-33), total bilirubin of 0.6 mg/dL (0.3-1.2), albumin of 4.4 g/dL (3.6-5.1), and international normalized ratio (INR) of 1.1. Serum fibrosure testing did not show any fibrosis (F0). Abdominal ultrasound revealed increased hepatic echogenicity consistent with steatosis and new right hepatic lobe lesion of 3.1 × 3.2 × 3.2 cm size. The pancreas and gallbladder were unremarkable. Magnetic resonance imaging (MRI) of the abdomen showed a lesion in segment 6. It was hypointense on T1 and hyperintense on T2-weighted images and measured

4.1 × 4.0 × 3.7 cm (Figures 1 and 2). Further workup showed normal lipid panel, CA-19-9 of 9 U/mL (<35), positive ANA (antinuclear antibody): 320, alpha fetoprotein (AFP) of 2.6 ng/mL (<6.1), IgG of 1465 mg/dL (600-1540), IgG1 of 704 mg/dL (382-929), IgG2 of 547 mg/dL (241-700), IgG3 of 59 mg/dL (22-178), and IgG4 of 83.3 mg/dL (4-86).

The patient then underwent a liver biopsy, which noted mild steatosis and nonspecific inflammatory cells without evidence of malignancy. These findings were deemed nonspecific. Repeat MRI 8 weeks later showed further increase in size to 4.3 × 4.6 × 4.2 cm. Repeat liver biopsy was done and pathology showed similar nonspecific findings. IgG4 staining was positive but weak (Figures 3 and 4). It was decided to perform a laparoscopic evaluation and possible resection. Intraoperatively, the lesion was not visible and hence resection was not pursued. A second opinion consultation of the already performed liver biopsy slide was requested, which revealed lympho-histiocytic infiltrate and fibrosis consistent with IPT. Repeat MRI of the abdomen confirmed a decrease in the size of the liver lesion to 2 × 1.7 × 1.2 cm, with further decrease to 1.6 cm in the largest dimension 4 months later. Interestingly, the patient had been on an increased dose of prednisone (20 mg) for her polymyalgia rheumatica after her initial diagnosis of the liver mass. Further surveillance with plans to increase interval length was decided as the route of care.

Discussion

Inflammatory pseudotumors can develop throughout the body. The lungs are the most common site of origin.[4] In 405 resected liver tumors, the incidence for hepatic IPTs was 0.7%. A median age is reported to be around 65.[3] These tumors are more common in the non-European population with a male to female ratio of 1:1 to 3.5:1.[1,5] The etiology and disease process are unknown. Possible causes included trauma, infections, vascular, and autoimmune disorders such as IgG4 disease.[1] Cases of monoclonal lesions have been found, pointing more toward a tumoral origin, but other cases have shown regression with antibiotic and steroid therapy, favoring an inflammatory origin.[6]

Hepatic IPTs are a diagnosis of exclusion. Differential diagnosis includes hepatocellular carcinoma, metastatic tumor, cholangiocarcinoma, inflammatory myofibroblastic tumors, inflammatory types of angiomyolipoma, and follicular dendritic cell tumors.[7]

Most common symptoms include fever, fatigue, malaise, weight loss, and abdominal pain.[4] Physical findings can include jaundice, hepatomegaly, or splenomegaly.[8] Laboratory findings can be normal or nonspecific. Elevated white blood cell count, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) can be seen in about a third of the patients. Fifteen percent can have abnormal liver chemistries.[4] Elevated CA 19-9 levels have been reported, but AFP levels

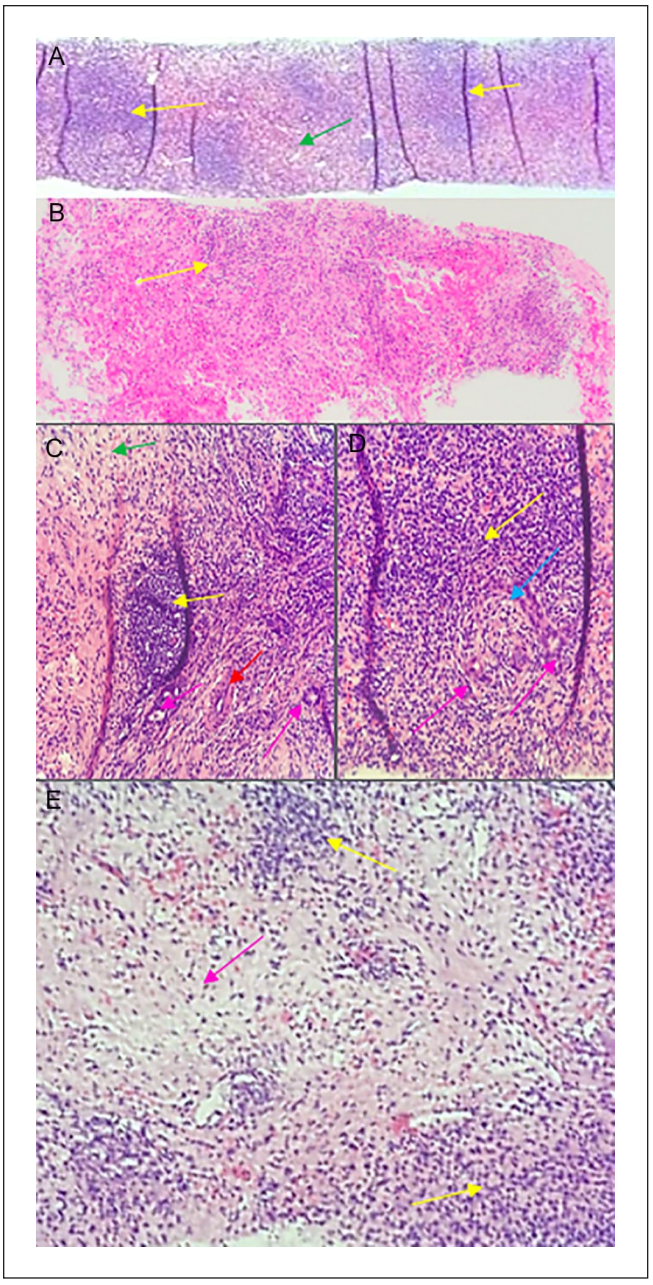

Figure 3. (A) The needle core biopsy showed lack of normal hepatic parenchyma with nodules of dense inflammatory infiltrate (yellow arrows) in a background of fibrosis (green arrows). (B) Inflammatory infiltrate (yellow arrow). (C) Replacement of the liver parenchyma with monotonous lymphoid aggregates (yellow arrow), fibrosis (green arrow), and scattered plasma cells and macrophages. Stains performed on the lymphoid aggregates showed a mixture of CD20+ B cells and CD3+ T cells. Normal portal structures were identified within the lesion such as bile ducts (pink arrows) and arterioles (red arrow). (D) A poorly formed granuloma (blue arrow) is seen here with surrounding residual bile ducts (pink arrows) and a dense lymphoplasmacytic infiltrate (yellow arrow). (E) Portions of the core biopsies displayed extensive fibrosis (pink arrow) on H&E as relatively hypocellular, pink areas. Smaller aggregates of lymphocytes and plasma cells were also seen in these areas (yellow arrow).

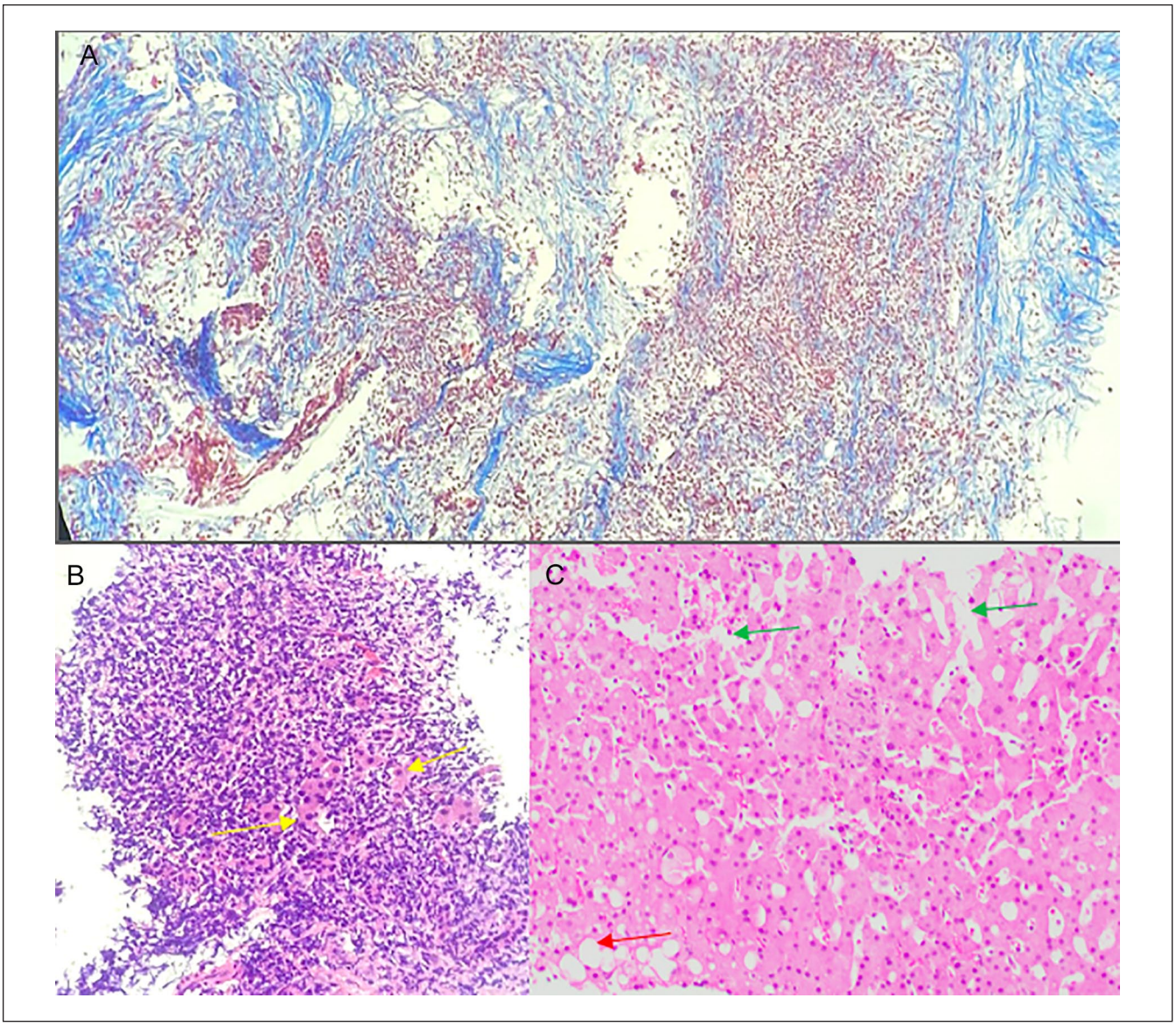

Figure 4. (A) Masson trichrome stain highlights the areas of dense fibrosis as a bright blue color. (B) Hepatocytes (yellow arrows) are seen scattered through the dense inflammation in some areas, suggesting that the inflammatory cells infiltrated the liver parenchyma causing marked distortion of the parenchyma. (C) In areas of uninvolved liver parenchyma, atrophy of the hepatic plates can be seen. The atrophied hepatocytes give the appearance of dilated sinusoids (green arrow). Mild steatosis was focal and patchy (red arrow).

are usually normal.[1,9] Similarly, our patient had presented with abdominal pain but otherwise blood work was within normal limits, including AFP and CA 19-9.

Imaging studies such as computed tomography (CT) scan, MRI, and ultrasound are noncharacteristic and cannot differentiate IPTs from other tumors.[9] Reported hepatic IPTs are mostly solitary and solid.[1] Sixty-one percent are found in the right hepatic lobe.[5] This was consistent in our patient where the liver lesion was found in segment 6 of the right hepatic lobe. On ultrasound, these tumors can be hypoechoic, hyperechoic, or mixed echoic.[10] Depending on the vascularity of the mass, different enhancement patterns on imaging can be seen. Often a heterogeneous enhancement or peripheral enhancement in the arterial phase is seen, but homogeneous enhancement in the arterial phase or washout in the delayed phase has also been reported. The MRI commonly reveals hypointensity on T1-weighted and hyperintensity on T2-weighted images.[11] On fluorodeoxyglucose (FDG)-positron emission tomography (PET) scan, these tumors can show low to high uptake.[4]

Histopathological confirmation with percutaneous biopsy or surgical resection is often needed.[8] In our patient, it was decided to pursue a surgical resection after the liver biopsies due to the rapidly evolving size of the liver lesion and lack of a definitive diagnosis despite a repeat liver biopsy. Histologically, IPT of the liver is characterized by proliferation of fibrous tissue and inflammatory cells, including

plasma cells, neutrophils, lymphocytes, eosinophils, macrophages, and/or multinucleated giant cells.[12]

Inflammatory pseudotumors of the liver typically resolve spontaneously.[1] Treatment approaches are controversial and can include conservative and surgical modalities.[4,13] Conservative management includes observation with follow-up imaging, antibiotics, steroids, and other anti-inflammatory drugs.[11] There are multiple reports on patients with underlying autoimmune disease such as autoimmune pancreatitis and Sjogren syndrome with hepatic IPT that responded to steroid therapy.[14-16] In our patient, it is possible that the decrease in the size of her liver lesion occurred in the setting of her higher dose of steroid therapy for her polymyalgia rheumatica.

Surgical intervention is required if patients continue to be symptomatic, if the lesion is increasing in size and compressing vital structures, or if the diagnosis is unclear.[17] In our patient, a surgical resection was planned due to the rapidly increasing size of the liver lesion but aborted intraoperatively as the lesion was not clearly visualized.

The prognosis of IPTs of the liver is good, but there have been reports of local recurrence and neoplastic transformation.[11,18]

Tompkins et al and Kato et al have previously reported on a patient with IPT of the lungs and thoracic spine, respectively, with underlying polymyalgia rheumatica.[19,20] There are no reports on patients with polymyalgia rheumatica and hepatic IPT. In our patient, we did not find any other underlying causes, which could have led to an IPT of the liver except for her polymyalgia rheumatica.

This is the first case of hepatic IPT associated with polymyalgia rheumatica, which responded to steroid therapy. With our case, we would like to increase awareness for IPTs as a potential differential diagnosis in patients with liver lesions, especially with underlying autoimmune disorders.

Declaration of Conflicting Interests

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Verbal informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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