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Case Report / Olgu Sunumu

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Is it a liver abscess or liver infarction? Diagnostic dilemma in a patient with systemic lupus erythematosus and antiphospholipid syndrome: a case-based mini review

Karaciğer apsesi mi yoksa nekrozu mu? Sistemik lupus eritematoz ve antifosfolipid antikor sendromu olan hastada tanısal ikilem: Olgu eşliğinde kısa bir derleme

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Abstract

Thromboses in hepatic and portal veins are the most common problems affecting the gastro-hepatic system in antiphospholipid syndrome (APS), but hepatic artery thrombosis has been rarely reported especially during pregnancy or the postpartum period. We have reported a 26-year-old female patient with a previous diagnosis of systemic lupus erythematosus and APS manifested by fever and severe abdominal pain. Based on clinical and laboratory findings, diagnosis of liver abscess was initially considered. The final diagnosis was confirmed as liver infarction due to APS based on liver biopsy. After treatment with intravenous immunoglobulin, anticoagulation, plasmapheresis, and steroid, the clinical and laboratory improvement were observed. Here, our aim is to attract attention that hepatic necrosis may mimic liver abscess in terms of clinical symptoms and laboratory findings.

Keywords: Systemic lupus erythematosus, antiphospholipid antibody syndrome, hepatic necrosis, liver abscess

Öz

Hepatik ve portal ven trombozları antifosfolipid antikor sendromunun (AFAS) en sık gastrointestinal tutulum şeklidir. Hepatik arter trombozları ise özellikle gebelik veya postpartum dönemde nadir de olsa bildirilmiştir. Burada ateş ve şiddetli karın ağrısı ile başvuran 26 yaşında sistemik lupus eritematoz ve AFAS tanıları ile takip edilen kadın bir hasta sunduk. Klinik ve laboratuvar bulgular ile öncelikle karaciğer apsesi düşünülen hastaya karaciğer biyopsisi sonrası AFAS ilişkili karaciğer nekrozu tanısı kondu. İntravenöz immünoglobulin, antikoagülasyon, plazmaferez ve steroid tedavisi sonrası klinik ve laboratuvar iyileşme sağlandı. Amacımız nadir de olsa karaciğer nekrozunun klinik ve laboratuvar olarak karaciğer apsesini taklit edebildiğine dikkat çekmektir.

Anahtar Kelimeler: Sistemik lupus eritematoz, antifosfolipid antikor sendromu, karaciğer nekrozu, karaciğer apsesi

Introduction

Antiphospholipid syndrome (APS) is an autoimmune disease characterized by arterial and venous thrombosis due to antiphospholipid antibodies. Obstetrical APS is another entity that may affect both mother and fetus during the entire pregnancy with high morbidity.[1] The syndrome can be primary when happening in patients without identified autoimmune disease or associated with autoimmune diseases, particularly systemic lupus erythematosus (SLE).[2] Although mesenteric ischemia or portal and hepatic vein thrombosis can be seen during APS, liver ischemia and necrosis can rarely occur.[3] Here, we reported a case with SLE, and APS presented with fever and abdominal pain mimicking liver abscess. In this case-based review, we would like to emphasize that APS-induced liver infarction can mimic a liver abscess radiologically and clinically.

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Case Presentation

A 26 -year-old female with a previous diagnosis of SLE, APS, type 1 diabetes mellitus presented to emergency department with new onset dyspnea and vague abdominal pain. Past medical history was remarkable for deep venous thrombosis (DVT), pulmonary thromboembolism (PTE) and transient ischemic attack (TIA). Her medications included warfarin, insulin detemir, insulin aspart and oral cyclophosphamide for resistant immune thrombocytopenia. However, the patient indicated not receiving the drugs in the last three days for unknown reasons. Pathologic findings on physical examination were as follows: Mild tachycardia, tachypnea, and mild abdominal tenderness in the right upper quadrant on palpation. Blood pressure was normal, and no pathologic sounds were found during lung examination. Laboratory findings including hemoglobin 12.4 g/dL, platelet count 24.000/mm^3, lymphocyte count 450/mm^3, C-reactive protein 322 mg/L (normal range; 0-5 mg/L), erythrocyte sedimentation rate 82 mm/hour, aspartate aminotransferase 450 U/L (normal range; 0-40 U/L), alanine aminotransferase 311 U/L (normal range; 0-40 U/L), lactate dehydrogenase 760 U/L (normal range; 135-214 U/L), pro-calcitonin 2.1 ng/mL (normal range; <0.046 ng/mL), D-dimer 3.59 mg/L (normal range; 0-0.5 mg/L), serum fibrinogen 699 mg/dL (normal range; 170-420 mg/dL), prothrombin time 15 (normal reference; 10.5-14.5), partial thromboplastin time 130 (normal range; 24-40), lupus anticoagulant 3.87 (normal reference; 0.8-1.2), anticardiolipin IgG antibody 27.8 UI/mL (normal reference; 9.9-10 UI/mL) were found. Pulmonary computerized tomographic (CT) angiography revealed thrombus formation in the left pulmonary artery branches. During follow-up with anticoagulation, on day 2 of hospitalization, fever (39 °C) was developed, and pain in the right upper quadrant of abdomen intensified mimicking acute abdomen. Contrast enhanced CT evaluation of abdomen demonstrated non-specific findings such widespread hypoechoic lesions in the liver (Figure 1). Doppler imaging showed normal blood flow in the portal and hepatic systems was remarkable for evidence of acute thrombus formation of inferior vena cava (IVC) below the junction of hepatic veins. The liver abscess was initially considered based on fever, abdominal pain, and highly elevated acute phase parameters. Antibiotics and intravenous immunoglobulin (IVIG) were administered due to marked decrease in platelets with newly developed ischemia in the thumb finger of right hand and strong evidence of infection. However, microbiologic studies were found negative. Anticoagulation with enoxaparin was re-administered following elevation in platelets by IVIG. Dynamic magnetic resonance imaging (MRI) demonstrated lesions with T1W hypointense with peripheral enhancement and diffusion restriction observed along the right-middle hepatic vein traces (Figure 2). Liver biopsy was performed. Based on histopathologic evidence showing coagulation necrosis in the liver (Figure 3a, b), the diagnosis of APS related hepatic infarction was concluded and combination regimen of plasmapheresis and steroid was initiated. The patient was discharged with oral, cyclophosphamide, steroid, and subcutaneous low-molecular-weight heparin after complete clinical and laboratory improvement.

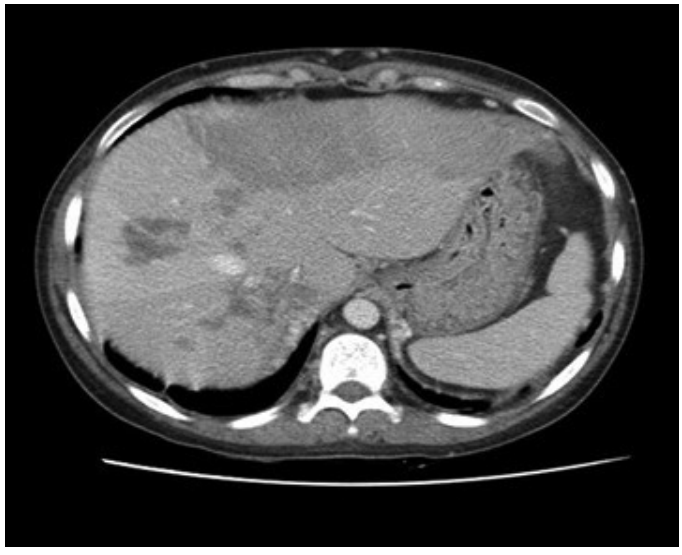

Figure 1. Widespread hypoechoic lesions detected by abdominal CT imaging

CT: Computer tomography

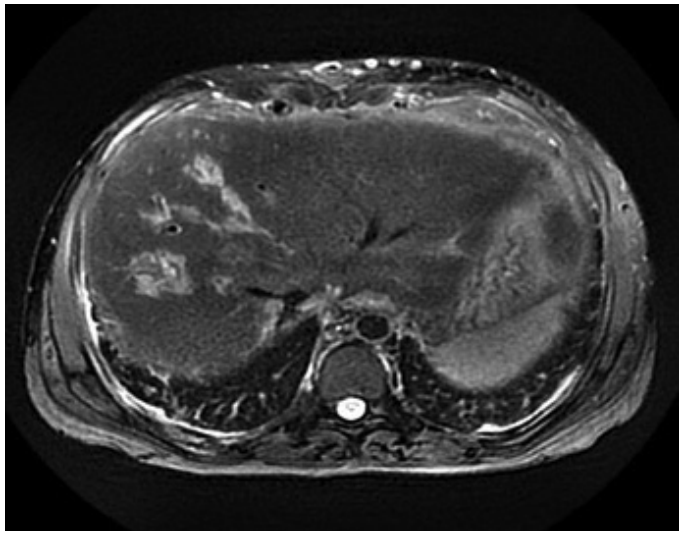

Figure 2. Lesions with T1W hypointense with peripheral enhancement and diffusion restriction observed along the right-middle hepatic vein traces on dynamic MR imaging of abdomen

MR: Magnetic resonance

Discussion

Liver is the most common affected organ among APS associated gastrointestinal involvement. The hepatic involvement generally manifests by clinical features of thrombosis of the hepatic veins, portal veins and rarely IVC.[3] Among those, hepatic infarction is rather uncommonly seen due to dual blood supply to liver by hepatic artery and portal system.

Gastrointestinal manifestations of SLE, such as nausea, vomiting and insignificant abdominal pain are generally mild. However, in the presence of acute severe abdominal pain in a patient with SLE, mesenteric vasculitis, hepatobiliary disease, and acute pancreatitis should be considered in the differential diagnosis.[4] In a study a study based on liver biopsy findings of patients with SLE, hepatic congestion was found the most common histopathologic feature followed by fatty changes, arteritis, peliosis hepatis, nodular regenerative hyperplasia, and rarely hepatic necrosis.[5]

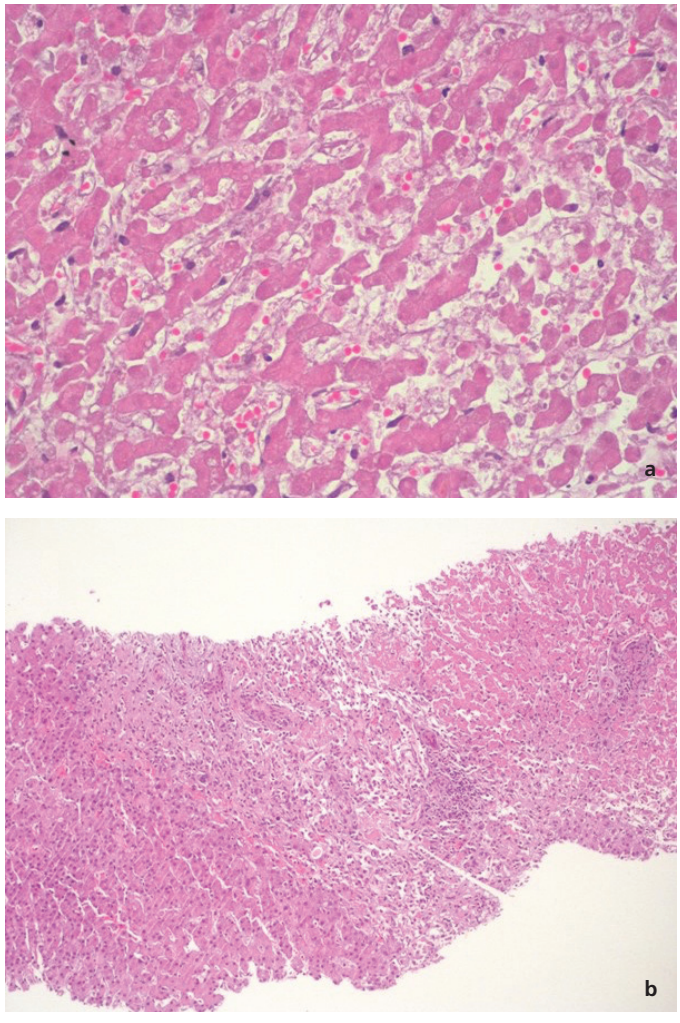

Figure 3a. Left side of the picture demostrated preserved liver parenchyma, liver necrosis is seen in the right side (HE x 100), **b.** Hepatic cell nuclear loss in the necrotic areas and intact trabecular structure and sinusoids in liver parenchyma. (HE x 400)

The first case possibly representing the association of hepatic infarction with high lupus anticoagulant titer in the literature was described in a 31-year-old female patient manifested with fever, right upper abdominal pain, thrombocytopenia, and elevated liver function tests following termination of 26-week pregnancy. The diagnosis of hepatic infarction was considered based on multiple hypoechoic lesions in liver upon CT imaging and the presence of high titers of lupus anticoagulant. The clinical improvement was documented after administration of steroid and heparin.[6] To date, nearly all cases of hepatic necrosis and/or infarction were reported during pregnancy and/or in the postpartum period due to APS itself or related to HELLP (H: Hemolysis, EL: Elevated Liver enzymes, LP: Low Platelets) syndrome.[7-9]

In the literature, the first case of hepatic infarction in a patient with SLE was identified in a 24-year-old male receiving hemodialysis presented with complaints of fever and right abdominal pain. Antibiotic treatment was initiated for a presumed diagnosis of acute cholecystitis. Thereafter, diagnostic laparotomy was required due to lack of response to antibiotics and deterioration in abdominal pain. The diagnosis of hepatic infarction was confirmed by multiple scattered necrotic foci appeared on laparotomy, histopathologic evidence of multiple micro-thrombosis in hepatic artery and portal venous branches and accompanied high lupus anticoagulant titers.[10]

What makes our case unique is that it is the first in the literature to demonstrate hepatic infarction in a non-pregnant female patient diagnosed with SLE and APS.

Of note, in our patient, we also should consider two other situations affecting the liver structure. Budd-Chiari syndrome (BCS), which is characterized by hepatomegaly, abdominal pain, and ascites, can be seen during APS due to hepatic vein occlusion.[3] In this study, the hepatic veins were patent and IVC thrombosis did not extend to the orifice of the hepatic veins. No evidence of ascites and hepatomegaly was also observed. As a result, we excluded the possibility of BCS in this case using radiological imaging tools. Another situation which should be taken into account is the catastrophic anti-phospholipid syndrome (CAPS). CAPS is a devastating condition characterized by multi-organ failure within a short time.[11] The patient had a history of thrombotic events such as TIA, DVT, and PTE developed in previous periods. In the last admission, we observed liver infarction, digital ischemia in her right-hand finger thumb and IVC thrombosis. However, digital ischemia may have stemmed from SLE-related vasculitis. Unfortunately, we did not perform a skin biopsy to confirm whether digital ischemia was due to APS or vasculitis. Additionally we cannot entirely rule out that IVC thrombosis may have already developed. If IVC thrombosis has developed in the

last week, CAPS should be considered in this case. However, the predominant vessel involvement in CAPS is in the form of small vessel thrombosis.[11]

The involvement of large vessels during CAPS is rarely observed. Therefore, we did not consider CAPS at the beginning of evaluation of our patient. However, we cannot deny that our patient may have definite CAPS. Whether it is a reflection of CAPS or not, what we want to specify in this case is that hepatic infarcts can mimic a liver abscess.[10-12]

As reported by Li et al.[12], in this patient, a diagnosis of the liver abscess was initially considered based on hypoechoic lesions on imaging and other clinical features. Liver biopsy, which was performed following a lack of response to antibiotics and negative microbiological studies, showed coagulation necrosis in the liver. As is well-known, marked increase in liver function tests is expected to occur in hepatic infarction. Moderate elevation in LFTs was found only in in our case, in contrast to the other two cases. Although no histopathological evidence of micro-thrombosis was demonstrated we considered APS-related arterial thrombosis and liver necrosis based on clinical and laboratory improvement after plasmapheresis and steroid treatment.

The differential diagnosis of these two entities is of great importance because of the completely different therapeutic management. Ultrasonography and CT imaging may not suffice to confirm a precise diagnosis. Of note, the enhancement seen along hepatic vascular structures and perivascular intensity on MRI are highly suggestive findings for hepatic infarction.[13] In this case, Doppler imaging and abdominal CT evaluation were inconclusive, therefore MRI was performed. Despite strong evidence suggesting hepatic necrosis in MRI, an accurate diagnosis was confirmed by liver biopsy.

Conclusion

Albeit rarely seen, hepatic infarction should also be considered in the differential diagnosis in SLE, and patients with APS presented with fever, abdominal pain, elevated liver function tests that mimics liver abscess. Thus, liver biopsy should be considered as an option to eliminate diagnostic ambiguities in selected cases.

Ethics

Informed Consent: Written consent was taken from the patient.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: R.Y., C.K., Design: R.Y., D.Ü.C., M.D., C.K., Data Collection or Processing: R.Y., M.D., D.A., C.K., Analysis or Interpretation: R.Y., D.Ü.C., M.D., D.A., C.K., Literature Search: R.Y., D.Ü.C., M.D., C.K., Writing: R.Y., D.Ü.C., C.K.

Conflict of Interest: No conflict of interest was declared by the authors.

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