CASE REPORT

Incidental diagnosis of liver tuberculosis in a patient with jaundice

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SUMMARY

A 30-year-old afebrile woman presented with anorexia, yellowish discolouration of the sclera and bilateral pedal oedema. Blood investigations revealed severe anaemia, raised erythrocyte sedimentation rate and thrombocytopaenia. Liver function tests were abnormal with raised bilirubin, alanine transaminase and prothrombin time. Chest roentgenogram was negative for tuberculosis. Abdominal ultrasonography (USG) revealed coarsened echotexture of the liver with surface nodularity. Contrast-enhanced CT scan revealed heterogeneity with surface and parenchymal nodularity scattered throughout the liver parenchyma. USG-guided liver biopsy was performed, which showed changes in granulomatous hepatitis with positive Ziehl-Neelsen staining for acid-fast bacilli. The patient was started on antituberculous drugs. After completion of the antituberculous regimen, the patient made an uneventful recovery with normal range of aspartate aminotransferase, serum albumin and prothrombin time. In summary, isolated liver tuberculosis is rare and a high index of suspicion is required in a patient from an area where tuberculosis is endemic, after excluding other common diffuse liver pathologies.

BACKGROUND

Tuberculosis (TB) is an ancient disease of global importance today. An estimated 20% of the global burden of tuberculosis is in India.¹ TB is primarily a lung infection but it can affect many other organ systems. In hepatic TB, the liver is involved by the haematogenous spread of bacilli. Imaging plays a vital role in the diagnosis of hepatic TB. However, biopsy is confirmatory. Isolated liver TB is extremely rare and a high index of suspicion is required in endemic regions. We report a case of a young woman diagnosed with hepatic TB who made an uneventful recovery after completion of anti-TB drugs.

CASE PRESENTATION

A 30-year-old woman presented with anorexia, yellowish discoloration of the sclera and bilateral pedal oedema. These symptoms were progressive over the course of 20 days. There was no history of breathlessness, chest pain, cough, gastrointestinal bleeding or diurnal variation, and no history of medications. General examination revealed scleral icterus and pitting pedal oedema. The patient was afebrile. She had no stigmata of chronic liver failure such as spider angioma, palmar erythema and gynaecomastia. There was no evidence of

hepatomegaly or splenomegaly and no history of substance abuse or any significant family history.

INVESTIGATIONS

The patient's tests revealed severe anaemia with haemoglobin of 6.4 g%; microcytic hypochromic anaemia with a few target cells was seen on peripheral smear; erythrocyte sedimentation rate was 26 mm at the end of the first hour (raised) and platelet count was reduced (56 000, normal range 150 000–450 000). Liver function tests showed raised bilirubin 7.8 mg/dL (normal range 0–1, with a direct fraction of 6.0 mg/dL), raised aspartate transaminase 245 U/L (normal range <49 U/L), hypoalbuminaemia 2.4 g/dL (normal range 3.6–4.4 g/dL) and an elevated prothrombin time 1.76 international normalised ratio (INR) (normal reference range of INR is <1.3). Hepatitis B surface antigen (HBsAg) and hepatitis C virus antigen were negative. Ascitic fluid analysis was suggestive of serum-ascites albumin gradient of 1.9, with <140 cells, mainly mesothelial, suggesting portal hypertension as the aetiology. There were no signs of TB on the chest X-ray.

Abdominal ultrasound revealed mild ascitis with mild splenomegaly. The liver had a coarsened echo texture with surface nodularity (figures 1 and 2). Plain CT scan of the abdomen revealed a normal-sized liver with an irregular external contour. Multiple hyperdense nodules were seen scattered throughout the liver parenchyma (figure 3). Contrast-enhanced CT scan revealed no enhancement of the liver nodules on arterial phase. However, remaining intervening normal parenchyma was seen enhancing (figure 4). Portal venous

Figure 1 Abdominal sonography image revealed coarsened echo texture of liver with surface nodularity.

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Figure 2 Abdominal sonography with high-frequency superficial probe showing a coarsened echo texture of the liver with surface nodularity and multiple hyperechoic nodules scattered throughout the liver parenchyma.

phase showed marked normal liver parenchymal enhancement with minimally enhancing hypodense nodules (figure 5). On delayed phase, CT scan showed wash out of contrast from the normal intervening parenchyma with isodense appearing nodules (figure 6).

Ultrasound-guided liver biopsy was performed after correction of the coagulation profile, which revealed changes of granulomatous hepatitis (precirrhotic/early cirrhotic stage with grade 3 inflammation). Ziehl-Neelsen (ZN) stain was positive for acid-fast bacilli (figure 7).

TREATMENT

The patient was started on ofloxacin, rifampicin and ethambutol; isoniazid and pyrazinamide were subsequently added. The patient was treated for 6 months with close monitoring of liver function tests.

OUTCOME AND FOLLOW-UP

After initiation of treatment, the patient showed signs of improvement within 2 weeks. After the completion of anti-TB regimen, she improved well with normal aspartate aminotransferase, serum albumin and prothrombin time.

Figure 3 Plain CT of the abdomen revealed a normal-sized liver with an irregular external contour. Multiple hyperdense nodules were seen scattered throughout the liver parenchyma.

Figure 4 Contrast-enhanced CT scan revealed no enhancement of the liver nodules on arterial phase. However, the remaining intervening normal parenchyma was seen enhancing.

DISCUSSION

TB is declining in the Western population. Owing to the AIDS epidemic, TB showed a reverse trend, making TB a global health problem. Hepatic TB has been mainly reported from South Africa and the Philippines.^{2 3} Abdominal TB is common in endemic regions but isolated hepatic TB is rare. Incidence of isolated liver TB is 0.3%.⁴

Many types of liver TB have been described. However, most commonly, diffuse involvement or granulomas/abscesses are seen within the liver when it is involved as a part of disseminated or pulmonary TB.⁵ Sometimes, liver TB may also involve bile ducts.⁶

Fever is the most common symptom in hepatic TB granulomatosis, followed by weight loss and abdominal pain. Hepatomegaly is present in more than 50% of patients whereas splenomegaly is present in 33%.^{2 7 8} Simultaneous lung involvement in hepatic TB is common, but isolated hepatic TB, as was seen in our case, is rare.⁹ Extra pulmonary TB is common in HIV patients; however, our case demonstrates that isolated liver TB can also occur without any apparent underlying immuno-compromised state.

Contrast-enhanced imaging studies have described two types of liver TB—micronodular and macronodular. In the micronodular

Figure 5 Portal venous phase showed marked normal liver parenchymal enhancement with minimally enhancing hypodense nodules.

Figure 6 On delayed phase, CT scan showed wash out of contrast from the normal intervening parenchyma with isodense appearing nodules.

type, granulomas are of 0.6 mm to 2 cm in size and show a low attenuation area with central enhancement in acute stages, and calcification in the chronic stage. In the macronodular type, granulomas are >2 cm in diameter and are either a single large mass or multiple diffuse tumour-like masses with hepatosplenomegaly. The micronodular type should be differentiated from metastasis, fungal infection and sarcoidosis. The macronodular type should be differentiated from lymphoma, metastasis, abscess or primary liver malignancy.

However, confirmative diagnosis is based on liver biopsy where demonstration of acid-fast bacilli on ZN staining and

Figure 7 (A) H&E staining of the liver biopsy specimen showing granulomatous inflammation and caseous necrosis with epithelioid cells, lymphocytes and Langhans multinucleated giant cells. (B) Ziehl-Neelsen staining of liver biopsy specimen showing acid-fast bacilli.

caseous necrosis is a very useful histopathological sign; but this may be absent in a majority of patients and cannot be used to rule out a diagnosis of liver TB.

The standard regimen of anti-TB drugs, which consists of four drugs (isoniazid, rifampicin, ethambutol and pyrazinamide) during the initial 2 months, followed by isoniazid and rifampicin for the next 4–6 months, is used.⁷ Fluoroquinolones combined with first-line anti-TB drugs is a new protocol with satisfactory effect and low hepatotoxicity incidence, and therefore might be safer in the treatment of post-transplant TB.¹⁰

Liver TB is an important curable condition, especially in endemic regions. It is important, particularly for physicians in these areas, to know its varied presentations, diagnostic pitfalls and treatment regimen. This case demonstrates an unusual presentation of isolated granulomatous hepatitis in an immunocompetent young woman.

Learning points

- ▶ A high index of suspicion is required to diagnose liver tuberculosis (TB) in endemic regions in a patient presenting with abnormal liver function.
- ▶ Routinely used anti-TB drugs are hepatotoxic, so modification of the drug regimen is required.

Contributors ABP and KP contributed to data collection, aggregation of materials and investigations. PPS and RGB contributed to work related to USG and CT, and wrote the manuscript.

Competing interests None.

Patient consent Obtained.

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