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Clinical note

Abdominal lymph nodal tuberculosis causing extrahepatic portal venous obstruction in an adolescent boy

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Tuberculosis (TB) remains a major global public health concern with India accounting for approximately 27% of the global TB cases.[1)] Pulmonary TB is the most common form; however, extrapulmonary TB (EPTB) accounted for 22% of the 2.4 million TB cases notified in 2022. Among EPTB, lymph nodal TB was the commonest form followed by pleural and abdominal TB.[2)] Abdominal TB, i.e., infection of the gastrointestinal tract, the mesentery, its nodes (peripancreatic, periportal, mesenteric, and omental), omentum, peritoneum, and related solid organs accounts for nearly 10% of all cases of TB.[3)] Herein, we report a case of an abdominal tubercular lymph nodal mass encasing the portal vein and leading to portal hypertension.

A 13-year-old boy presented with constitutional symptoms (fever, weight loss of 2 kg) for 2 months, along with a positive family history of lymph nodal TB. There was no history of abdominal pain. On evaluation, there was mild pallor, abdomen was soft, nontender, there was no organomegaly. Hemogram showed anemia (8.5 g/dL), total leukocyte count and platelet count were normal, erythrocyte sedimentation rate was 65 mm/hr and C-reactive protein was 69 mg/L. Mantoux test was positive (20 mm), and gastric aspirate for acid fast bacilli Ziehl-Neelsen staining and TB CBNAAT (cartridge based nucleic acid amplification test) was negative. Considering the long duration of fever and weight loss, exposure to a family member with TB, endemicity of TB in our country, and the raised inflammatory markers in this child, ultrasonography of the abdomen was performed. Ultrasonography of the abdomen showed a lymph nodal mass in the periportal region, causing narrowing of the main portal vein, with few necrotic periportal lymph nodes. Hence, suspecting TB, contrast-enhanced computed tomography (CECT) of the thorax and abdomen was done. CECT of the abdomen showed an abnormal soft tissue density mass (4.7 cm×4.9 cm) in the periportal region, encasing hepatic artery, main portal vein, and common bile duct, and causing bilateral intrahepatic biliary radicle dilatation with portal collaterals, without any evidence of portal vein thrombosis (Fig. 1A and B). CECT thorax showed nodules in bilateral upper and lower lobes of the lungs, few showing central cavitation. Ultrasonography-guided biopsy of the periportal mass was suggestive of necrotizing granulomatous inflammation indicative of TB, tissue CBNAAT did not detect *Mycobacterium tuberculosis* (MTB). Based on these findings, a diagnosis of disseminated TB (abdominal lymph nodal and pulmonary) was made, and antitubercular therapy (ATT) was initiated (isoniazid [H] 8 mg/kg/day, rifampicin [R] 13 mg/kg/day, pyrazinamide [Z] 30 mg/kg/day, and ethambutol [E] 20 mg/kg/day). Follow-up CECT abdomen after 6 months of ATT (2HRZE+4HRE) showed residual hypodense periportal tissue with complete obliteration of right portal vein and increased periportal, peripancreatic, and perigastric collaterals (Fig. 1C–E). Hence, ATT was continued for another 3 months. Clinically, the child improved with resolution of symptoms; he gained 3-kg weight, with improvement in his appetite and remained asymptomatic. Follow-up CECT abdomen after 9 months of ATT showed complete resolution of the periportal lymph nodal mass with extrahepatic portal venous obstruction (EHPVO) (Fig. 1F).

Abdominal TB with periportal lymph node involvement leading to portal hypertension is extremely rare. In most reported cases, portal compression was reversible with ATT, though some required surgical shunt for decompression.[4-6)] In contrast, our case showed irreversible right portal vein obliteration despite adequate therapy, indicating fibrotic sequela as the cause of persistent portal hypertension. The underlying mechanism of portal hypertension in this case is likely to be extrinsic compression and/or surrounding chronic inflammation as

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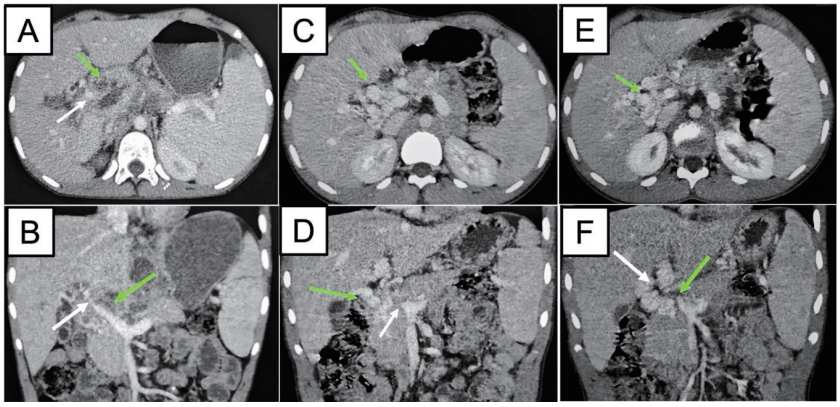


Fig. 1. (A) First axial computed tomography (CT) at diagnosis showing an enlarged necrotic periportal nodal mass (green arrow) encasing the main portal vein (white arrow). (B) First coronal CT showing the attenuation of portal vein (white arrow) surrounded by the nodal mass; multiple necrotic retroperitoneal lymph nodes are visible (green arrow). (C) Follow-up axial CT after 6 months of antitubercular therapy (ATT) showing prominent periportal collateral network network (green arrow). (D) Follow-up coronal CT after 6 months of ATT showing reduction in the periportal nodal tissue with severe attenuation of the portal vein (white arrow) and development of periportal collateral vessels (green arrow). (E) Follow-up axial CT after 6 months of ATT showing persistent prominent periportal collaterals (green arrow). (F) Follow-up coronal CT after 9 months of ATT showing resolution of the periportal lymph nodes with complete portal vein obliteration (green arrow) and prominent collaterals (white arrow).

reported earlier in patients with periportal lymphadenopathy due to TB.[7,8] Although we could not detect MTB in culture or CBNAAT, patient's history of exposure to TB, clinical response to the standard ATT regimen for MTB (weight gain and resolution of fever), and the radiological resolution of periportal lymphadenopathy, suggests that MTB is the likely causative agent in this case. As we did not get any yield from culture and CBNAAT, any further tests to differentiate MTB from nontuberculous mycobacteria could not be performed. The computed tomography showed resolution of periportal lymph nodes with portal vein thrombosis, which is likely due to the fibrotic sequela rather than active disease. It takes a few weeks to months for the ATT to act before we see a radiological reduction in the lymph nodal mass. If the portal vein is attenuated, periportal collaterals form within a few weeks.[9] Hence, we would like to highlight that if the main portal vein is attenuated in the initial radiological imaging, then one must keep the possibility of development of EHPVO as a sequela, which needs to be monitored by a hepatoportal Doppler.

To conclude, this case presents a rare complication of abdominal TB involving periportal lymph nodes in an adolescent boy. Extrinsic compression of the main portal vein along with the surrounding inflammation may give rise to portal vein compression and secondary cavernoma formation, which needs regular monitoring by a hepatoportal Doppler.

Question

Which of the following is true regarding tuberculosis?

A. Abdominal tuberculosis is the most common site of tuberculosis.
B. The microbiological diagnosis of tuberculosis is usually obtained from the intestinal biopsies in up to 80% cases.
C. The most commonly involved lymph nodes in abdominal tuberculosis are the retroperitoneal lymph nodes.
D. The most common site of intestinal tuberculosis is the ileo-caecal region.

Answer: D

Footnotes

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man participants were conducted in accordance with the ethical standards of the institution and the Declaration of Helsinki (1964), as revised in 2013. The parents have given their written consent for the anonymous publication.

Author contribution: Conceptualization: AA; Methodology: AA, UG, DB; Data curation: AA, UG, DB; Writing-Original draft preparation: AA; Visualization: AA, UG, DB; Investigation: AA, UG, DB; Formal analysis: AA, UG, DB; Validation: AA, UG, DB; Writing – review & editing: UG, DB

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