A Diagnostic Dilemma: Isolated Hepatic Tuberculosis as a Rare and Unusual Presentation of TB

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Abstract- Tuberculosis (TB) is the major problem being faced worldwide, particularly in developing countries, and therefore, it is important to recognize the unusual presentations of the disease. Although TB is primarily lung disease, it can affect several other organs such as bone, brain, liver, and intestine etc. Liver involvement in TB is not uncommon but isolated liver TB is the rarest form of TB. A common observation is that the mortality rate is higher in intra-abdominal TB as compared to pulmonary TB, but it is a difficult diagnosis to make, often requiring laparotomy. Liver tuberculoma is, in particular, rare, with fewer than 100 cases reported in the literature, most of which are secondary and associated with miliary TB. We present a case of primary hepatic tuberculoma in an immuno-competent host and illustrate how these cases can be managed non-surgically

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Introduction

Liver involvement in Tuberculosis is not uncommon but isolated liver tuberculosis is the rarest form of TB because of the low oxygen tension in the liver which makes it difficult for the Mycobacterial survival.It is not among the common differentials and is therefore misdiagnosed. It is usually found in immunocompromised patients particularly those with AIDS but here we report a rare case of Isolated hepatic tuberculosis in an immunocompetent host.

Case Report

A 18-year-old male patient from Khyber Agency presented to the outpatient department of Medical D unit, Khyber Teaching Hospital with a 1-week history of pain in the right hypochondrium and high-grade fever. According to the patient, the pain was sudden in onset, severe in nature, localized, and not radiating to the back. He denied any altered bowel habits, nausea and vomiting. His past medical and surgical history was not significant. There was no previous significant TB contact.

On Examination, there was no jaundice, anemia, or lymphadenopathy. He was febrile with a temperature of 102’F. Cardiovascular, respiratory, and nervous system examination was unremarkable for any signs. Abdominal examination revealed tenderness in the right hypochondrium with a mass palpable up to 4 cm below the right costal margin with absent fluid thrill and shifting dullness signs.

Initial blood results revealed microcytic, hypochromic anemia, leukocytosis, normal renal function tests, and electrolytes. Inflammatory markers like CRP and ESR were raised. All the liver function tests were normal except for a raised alkaline phosphatase. Alpha-Fetoprotien levels were within the normal range. Hepatitis B and C serology was also negative (Table 1).

Ultrasound abdomen and pelvis showed multiple hypodense lesions in the liver; the larger one was roughly 4 cm in size with a few enlarged lymph nodes around porta hepatis, features suggestive of hepatocellular carcinoma.

A contrast-enhanced abdominal CT scan was done, revealing multiple hypodense lesions in the liver larger one roughly 4-cm×4-cm in size (Figure 1).

The patient was shifted to the surgical ward where the lesion was excised and sent for histopathological study.

Biopsy report showed a collection of granuloma consisting of epithelioid cells (histiocytes) admixed with lymphoid cells, plasma cells. Also, Langerhans giant cells were seen associated with caseous necrosis suggestive of

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chronic granuloma of TB (Figure 2).

The patient was started on ethambutol, isoniazid, pyrazinamide, and rifampin along with hepatonics to minimize the potential liver toxicity of these drugs.

After 3 months of therapy, the patient was asymptomatic with normal serum inflammatory markers.

Repeat CT scan following six months of anti-tuberculous therapy revealed a complete resolution of the lesions (Figure 3).

Table. 1 Laboratory Investigations

Laboratory investigations	Patient's value	Reference ranges
Hemoglobin	11 gm/dl	12-15gm/dl
White cell count	19,000/cmmm	4000-11000/cmmm
Platelets	200,000/microliter	150,000-400000/mcl
C-Reactive Protein	Positive	
Erythrocyte sedimentation rate (ESR)	129 mm/1st hour	<20 mm/1st hour
Urea	1.65 mmol/L	1.2-3 mmol/L
Creatinine	0.65 mg/dL	0.8- 1.3 mg/dL
Serum Sodium	138.8 mmol/L	135-145 mmol/L
Serum Potassium	4 mmol/L	3.5-5 mmol/L
Serum Chloride	96 mmol/l	95-105 mmol/l
Total bilirubin	3.7 micromol/L	2-20 micromol/L
Alkaline phosphatase	190 U/L	50-100 U/L
Alanine transferase	20U/L	10-130U/L
Aspartate aminotransferase (AST)	15 U/L	10 - 34U/L
Alpha-fetoprotein	15ng/ml	10ng/ml - 20ng/ml

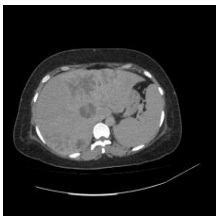

Figure 1. Abdominal CT scan showing multiple lesions in the liver larger one roughly 4-cm× 4-cm in size

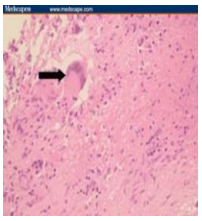

Figure 2. Ziehl Neelsen staining showing Acid Fast Bacillus

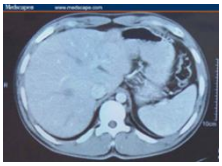

Figure 3. CT scan image of the abdomen, following 6 months of anti-tuberculous therapy, showing complete resolution of the lesions

Discussion

Hepatic TB has been classified by Levine (1) into: (a) miliary TB; (b) pulmonary TB with hepatic involvement; (c) primary liver TB; (d) focal tuberculoma or abscess; or (e) tuberculous cholangitis. The most common form of hepatic involvement is the miliary form of TB, in which hematogenous spread is through the hepatic artery (2). In the disseminated cases of TB, hepatic involvement can be seen in up to 80% of the cases. Isolated TB involvement of the liver is rare because of the low oxygen tension within the liver, which makes it unfavorable for mycobacterial growth. It is usually found in immunocompromised patients particularly those with AIDS but primary hepatic TB in an immunocompetent individual is extremely rare.

Leader (3), while reviewing world literature in 1952, found only 80 cases of such localized hepatic TB. Bhansali (4) had only two cases of hepatic tubercles among 300 cases of abdominal tuberculosis. Radin (5) found focal masses less than 2 cm in diameter in 11% of patients with disseminated tuberculosis.

Clinical presentation of the disease is highly variable and is usually a diagnostic challenge for the treating physician. However, the common presentation in such patients is fever, weight loss, abdominal pain, hepatomegaly, and altered bowel habits, diarrhea twice as common as constipation. The most frequent examination finding is abdominal tenderness with or without a palpable mass and occasional jaundice which occurs either by direct destruction of the parenchyma or might be obstruction of ducts by enlarged lymph nodes. Tuberculous cholangitis may present with jaundice and fever (6). However, the presentation of a focal liver abscess is often much less specific, with right upper quadrant abdominal pain, fever, night sweats, anorexia, and weight loss. Laboratory investigations often reveal an

elevated alkaline phosphatase in the presence of normal alanine transaminase and aspartate transaminase (1). Renal function tests are usually normal with normal serum electrolytes. Less specific findings include anemia, hypoalbuminemia, and hyponatremia (1). The white blood cell count is usually normal. ESR is raised in most of the cases.

The major diagnostic challenge is imaging studies with a number of differential diagnoses, including primary hepatocellular carcinoma. Hypoechoic nodules are usually seen at ultrasonography (7), though rarely they may appear hyperechoic. CT findings usually reveal a round hypodense lesion with slight peripheral enhancement and, occasionally, areas of focal calcification (7). Noninvasive diagnosis is therefore difficult, and up to 90% of cases require laparotomy and histopathological examination to make the diagnosis (8).

The histologic findings often achieve the diagnosis, with features of caseating granulomatous necrosis. Langerhans-type giant cells are often present with a mixed inflammatory infiltrate, including plasma cells, eosinophils, and lymphohistiocytic cells. As the histologic findings differ in the course of the disease, varying from granulomatous tissue with or without caseation necrosis to calcification and fibrosis in the healing stage, the variation in the CT findings may reflect different stages of tuberculoma.

Accompanying abdominal or mediastinal lymphadenopathy with the characteristic appearance of a low-density center with an enhancing rim and hepatomegaly are supportive findings in tuberculosis (9).

It is evident from the literature that the histological diagnosis is of importance and great significance in these cases, but avoiding laparotomy is ideal. In the reported case, an imaging-guided liver biopsy revealed the diagnosis.

Low sensitivity of both acid-fast staining (from 0% to 45%) and culture (from 10% to 60%) mean diagnosis can still be difficult (2). However, the presence of Mycobacterium Tuberculosis can be detected by the use of polymerase chain reaction. It has a specificity of 100% and a sensitivity of 95%. Treatment of hepatic TB is by quadruple therapy for 1 year, though there are often signs of clinical improvement within 2-3 months. Despite the potential of liver toxicity of the drugs used, treatment is the same as that of extrapulmonary TB. Surgical intervention is the better option in cases of macro-nodular lesions.

The use of percutaneous drainage has also been advocated. Mustard and colleagues suggested features associated with successful drainage included: (1) unilocular abscess; (2) safe access route for the installation of drainage catheter; and (3) a sterile uncontaminated compartment (10).

Hepatic TB, although rare, but with the increasing worldwide and regional incidence of TB, it is a diagnosis that must be considered among the differential diagnosis of space-occupying lesions of the liver. Since clinical features are variable and non-specific that can resemble neoplastic and infective conditions, the diagnosis requires a high index of suspicion. We suggest that in patients not showing typical features or who fail to respond to antibiotics; the tuberculous liver abscess should be considered.

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