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Case Report

Isolated tubercular cholecystitis: A rare diagnostic challenge ☆☆☆

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ABSTRACT

Abdominal tuberculosis, particularly affecting the hepatobiliary system, presents a diagnostic challenge due to its rarity and its tendency to mimic neoplastic conditions. Tuberculosis of the gallbladder, especially in the absence of pulmonary infection, is exceedingly rare. We present a case of isolated tubercular cholecystitis in a 41-year-old female initially suspected to have neoplastic etiology. Radiological imaging revealed thickened gallbladder wall with heterogenous enhancement extending into the subcutaneous plane. Histopathological examination post-cholecystectomy confirmed tubercular etiology with epithelioid cell granulomas and focal necrosis, alongside the presence of acid-fast bacilli. Such cases pose diagnostic dilemmas due to overlapping clinical and radiological features with gallbladder carcinoma. This report emphasizes the importance of considering tuberculosis in differentials, particularly in endemic regions like India, even without pulmonary symptoms. Treatment involves postoperative administration of anti-tubercular drugs, with the preoperative diagnosis being challenging and rarely achieved due to the avoidance of invasive procedures like fine needle aspiration in suspected carcinoma cases. The rarity of isolated gallbladder tuberculosis underscores the necessity for comprehensive diagnostic evaluations and awareness among clinicians in endemic regions.

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Introduction

Abdominal tuberculosis (TB) accounts for only 3.5% of all extrapulmonary TB [1]. Tuberculosis of the hepatobiliary system is uncommon and tuberculosis of the gallbladder in the absence of any active pulmonary infection is extremely rare with

only a few reported cases earlier [2,3]. Tubercular cholecystitis poses a diagnostic dilemma for clinicians as it tends to mimic neoplastic etiology clinic-radiologically [4]. In a TB endemic country like India tuberculosis should be considered as a differential diagnosis at unusual sites also when there are complaints of anorexia and weight loss. The gallbladder is typically considered resistant to tubercular infection due to its

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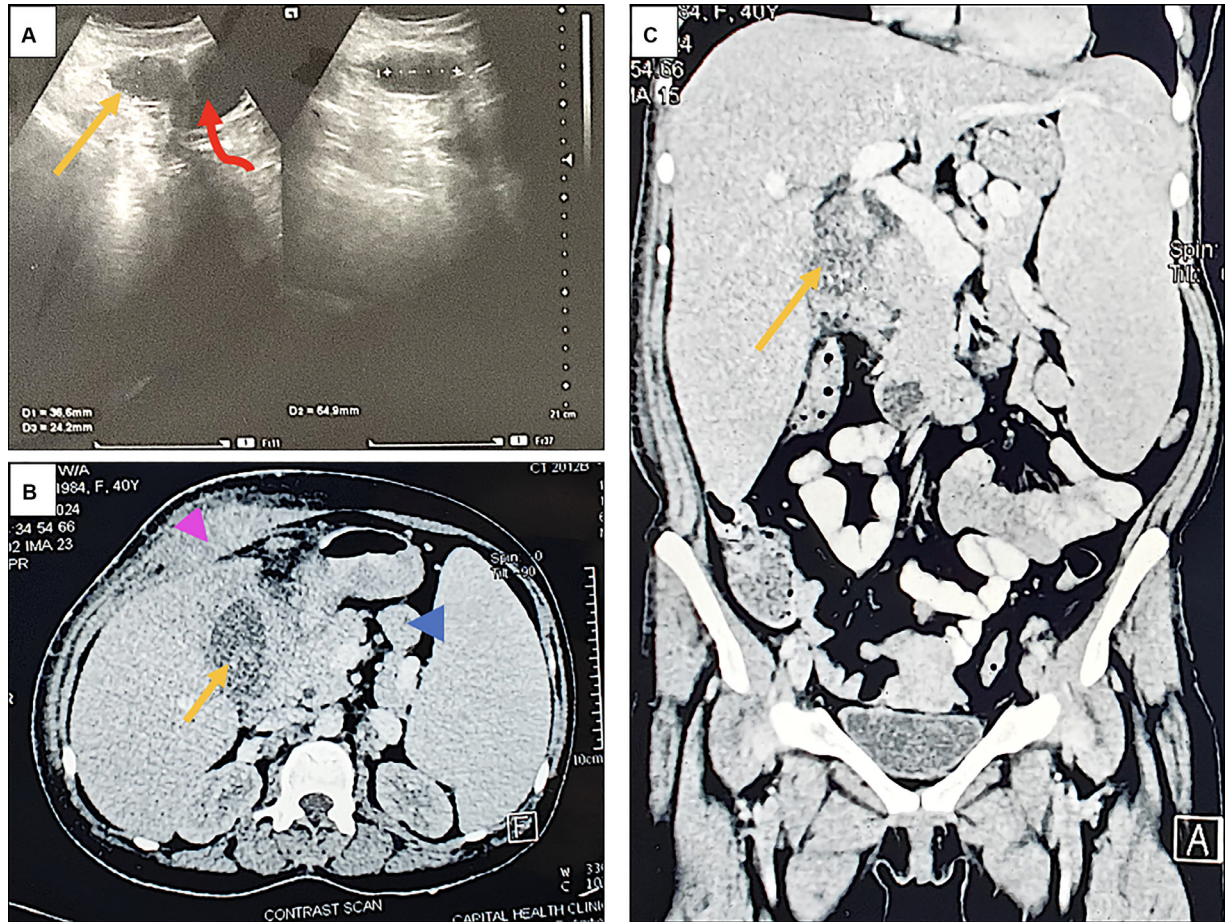


Fig. 1 – Radiological imaging. (A) Right upper quadrant USG exhibited a complex, heterogeneous collection (yellow arrow) contiguous with an irregular appearing moderately thickened and distended gall bladder (red curved arrow) with a calculus of 37 mm size with posterior acoustic shadow. **(B, C)** CECT abdomen in the portal venous phase- axial **(B)** and coronal views **(C)** exhibited a distended gallbladder and thickened wall measuring 5.1 cm with multiple calculi, the largest being 14 mm. A focal breach in the region of the fundus and ill-defined heterogeneously peripherally enhanced thick-walled collection (yellow arrow) adjacent to it were also observed. A large peripancreatic lymph node was noted (blue arrowhead in B) with stranding along the right upper anterior abdominal wall (magenta arrowhead in B). Hepatosplenomegaly was also seen in **(C)**. Differentials of inflammatory versus neoplastic etiology were considered.

thickened wall and natural resistance conferred by bile [5]. The absence of specific symptoms and endemic region of gallbladder carcinoma hinders preoperative diagnosis. The high risk of needle tract seeding of carcinoma gallbladder further precludes preoperative tissue sampling and therefore it is diagnosed only after postoperative histopathological examination. Here we present a case of isolated tubercular cholecystitis in an adult female with no signs and symptoms of pulmonary tuberculosis provisionally diagnosed for neoplastic etiology radiologically.

Case report

A 41-year-old female presented with complaints of on-and-off pain in the right hypochondrium region for the past 20 days

with no other medical illness. She also mentioned a decreased appetite and felt lassitude. However, there was no evening rise in temperature, significant weight loss, or chronic cough. There was no past history of tuberculosis or exposure to TB contact. Her general physical examination revealed normal respiratory and cardiovascular findings with mild anemia (Hb 12.3g/dl). No cervical or generalized lymphadenopathy was noted. Her abdomen was slightly distended and a lump was felt over the right upper quadrant region. A routine blood investigation showed raised leukocyte count (23000 cells/mm³), however liver and kidney profiles were within normal limits. Ultrasonography of the abdomen was ordered which showed a complex, heterogeneous collection contiguous with an irregular appearing moderately thickened and distended gall bladder. A calculus of 37 mm size with posterior acoustic shadow was seen in the lumen. Apart from this, 7 mm and 16.5 mm calculi were also present in the neck region. The col-

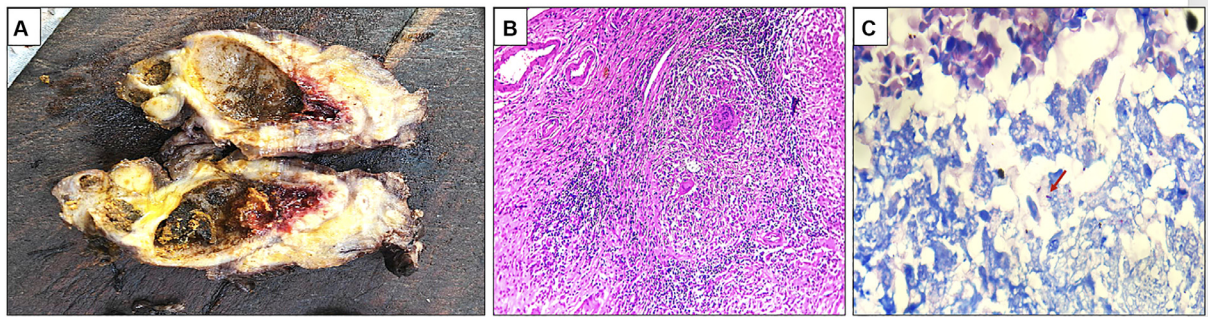


Fig. 2 – Gross and histopathological images. (A) Gross examination revealed a thickened and distended gall bladder with multiple stones. (B) Hematoxylin and eosin stained sections exhibited numerous epithelioid cell granulomas with Langhans giant cells and focal necrosis. [x100] (C) Ziehl Neelson stain exhibited occasional beaded acid-fast bacilli (marked with red arrow) [x1000].

lection adjacent to the gallbladder fundus and proximal part of the body measured $3 \times 4.2 \times 3.8$ cm and appeared suspicious. It was seen to extend in an intramuscular plane measuring approximately 7.4×3.5 cm. The common bile duct also appeared dilated with the proximal part measuring 14 mm whereas the mid and distal parts were obscured. A contrast-enhanced computed tomography was also done which revealed a distended gallbladder and thickened wall measuring 5.1 cm with multiple calculi, the largest being 14 mm. A focal breach in the fundal region and ill-defined heterogenous peripherally enhanced thick-walled collection adjacent to it measuring $3.5 \times 5.7 \times 4.3$ cm were also observed. The collection was reaching to the subcutaneous plane. A peripancreatic enlarged lymph node was also identified with irregular margins measuring 8×1.1 cm and appeared suspicious (Fig. 1). Apart from this hepatosplenomegaly was also noted. Differentials of inflammatory versus neoplastic etiology were considered.

The patient was planned for laparoscopic cholecystectomy after biochemical investigations of CEA [0-2.9 ng/mL] and CA19-9 [<37 IU/mL] both of which were raised (7.3 ng/mL and 41 IU/mL respectively). Grossly the gallbladder was distended and wall thickness measured around 4.3 cm. Multiple stones were identified and the cut surface showed fibrosed and thickened mucosa. Surrounding areas also showed fibrosis. Histopathological examination revealed multiple epithelioid cell granulomas with Langhans giant cells along with lymphocytes, plasma cells, and histiocytes. Focal areas with caseous necrosis were also observed. There was dense fibrosis and mucosa was denuded at most of the places. Ziehl-Neelsen staining showed occasional acid-fast bacilli which confirmed the diagnosis of tubercular cholecystitis (Fig. 2).

In the postoperative phase, anti-tubercular drugs including isoniazid, rifampicin, ethambutol and pyrazinamide were prescribed. The patient displayed significant recovery both from surgery and tuberculosis when reviewed after 2 months. She was advised to complete the course of anti-tubercular medicine to prevent residual disease and any further complications.

Discussion

Isolated tuberculosis of the gallbladder is an unusual diagnosis which is diagnosed only after cholecystectomy and histopathological evaluation. The patient presents with a combination of symptoms including abdominal pain, jaundice, vomiting and weight loss which is clinically diagnosed as cholecystitis, biliary obstruction and carcinoma. Radiology further increases the diagnostic dilemma as described by Xu et al. [4]. They described micronodular lesion, thickened wall and gallbladder mass as common radiological features out of which thickened wall was the most common one. Other features described in their study include heterogeneous enhancement and lymphadenopathy. In this case, a thickened wall, heterogenous enhancement and lymph node enlargement were seen. These findings are also non-specific as they are also described in carcinoma and xantho-granulomatous inflammation. An oedema halo is a radiological feature observed on computed tomography that is not typically seen in carcinoma patients [6]. This feature was also noted in the present case.

Krishnamurthy et al. [7] described a series of 3 cases of tubercular cholecystitis and all of them were initially diagnosed as carcinoma clinicoradiologically. All of them were histological surprises however 2 of them had a previous history of pulmonary tuberculosis and had taken a complete course of anti-tubercular drugs. The rarity of gallbladder tuberculosis lies in the fact that the gallbladder has bile which provides an alkaline medium that inhibits the growth of *Mycobacterium tuberculosis*. Cholecystitis and cystic duct obstruction are supposed to be contributory factors in this disease [3]. Interestingly, Verma et al. [8] described a similar case which was diagnosed preoperatively using fine needle aspiration biopsy, although radiologically it was diagnosed as malignancy.

Treatment is broadly classified into 2 groups including preoperative and postoperative diagnosis. Preoperative diagnosis is extremely rare because fine needle aspiration is avoided when carcinoma is among the differential diagnosis. Therefore, postoperative anti-tubercular drug administration is the

Table 1 – Clinicoradiological and histopathological features of previously reported cases of primary gall bladder tuberculosis reported in the literature.

Author	Age/Sex	Symptoms	Past history of TB/ contact of TB	Radiological findings	AFB	Histology
Bharti et al. [10]	55/M	Abdominal pain, itching, jaundice and clay coloured stool	No	Thickening of gallbladder and extension to cystic duct and proximal bile duct	Present	Epithelioid cell granulomas
Liu et al. [11]	68/M	Right hypochondrium pain, dyspepsia & loss of appetite	No	Thickening of gallbladder with heterogenous enhancement of wall	Absent	Epithelioid cell granulomas
Siddiqui et al. [12]	53/M	Abdominal bloating & postprandial epigastric fullness along with dry cough, low grade fever & sore throat	No	Ill-defined soft tissue mass involving fundus & body, abutting the surface of liver	Absent	Granulomatous inflammation
Chan et al. [13]	44/F	Right hypochondrium and epigastric pain	No	Thickened gallbladder wall with moderate increased density. On CT heterogenous density of wall	Present	Granulomas and caseous necrosis
Tarmohamed et al. [14]	84/M	Abdominal pain, vomiting, melena and weight loss	No	Dilated gallbladder with asymmetrical wall thickening	Present	Epithelioid cell granulomas and necrotising inflammation
Present case	41/F	Right hypochondrium intermittent pain	No	Thickened gallbladder wall with heterogenous enhancement going into subcutaneous plane	Present	Epithelioid cell granulomas with foci of necrosis

best possible approach and an extensive workup for pulmonary or extrapulmonary tuberculosis [9]. There are a very limited number of reported cases of isolated tuberculosis of the gallbladder. Table 1 shows a summary of the previously reported cases to highlight the rarity of the present case.

To conclude, gallbladder tuberculosis can mimic carcinoma of the gallbladder, and if there is a past history or family history of tuberculosis this should be kept as one of the differentials while evaluating a gallbladder mass. Also in patients with negative acid-fast bacilli, anti-tubercular drugs can be considered in the setting of other risk factors in endemic countries like India.

Patient consent

The written consent of the patient was obtained before submission.

CRediT authorship contribution statement

AAK was accountable for the design and conceptualization of the study, and writing the manuscript. CA was responsible for the acquisition and interpretation of clinical data. SA was responsible for the interpretation of data, and critically revising the manuscript for important intellectual content. All authors read and approved the final manuscript.

Previous presentation/ publication

None.

Ethical approval and consent to participate

The study was done in accordance with the Declaration of Helsinki.

Availability of data and materials

No new data were generated.

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