

Gallbladder tuberculosis: an unlikely diagnosis after laparoscopic cholecystectomy

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Summary

We present a rare case of isolated gallbladder tuberculosis (GBTB) confirmed on histological diagnosis after a laparoscopic cholecystectomy for suspected chronic cholecystitis. GBTB remains an extremely rare form of extrapulmonary tuberculosis (EPTB) and is furthermore unlikely to be seen in isolation from miliary or other abdominal tuberculosis (TB). It accounts for less than 1% of all TB cases, with even rarer presentations in the absence of other TB infection within the body. Diagnosis is hence often overlooked if clinical suspicion is not present, or histopathology is not considered.

Keywords: gallbladder, tuberculosis, laparoscopic cholecystectomy, cholecystitis

Case report

A 58-year-old female, known with rheumatoid arthritis, presented to our surgical outpatient department with vague upper abdominal pain, nausea, and early satiety. She did not have a history of vomiting, recent change in bowel habits, or melaena stools. She reported unintentional loss of weight without constitutional symptoms of tuberculosis (TB). Additionally, she denied having prior TB infections and there were no TB contacts. There was no history of nonsteroidal anti-inflammatory use, cigarette smoking, or recreational drug use. Of note, the patient was on chronic treatment for rheumatoid arthritis in the form of methotrexate and leflunomide. She was not on any chronic corticosteroids.

Clinically, she was not jaundiced or pale, and there was no lymphadenopathy. She had a non-distended soft abdomen, with mild tenderness in the epigastric region. No masses were palpated. A gastroscopy was performed which revealed mild gastritis. The *Helicobacter pylori* rapid was negative. She was initiated on a trial of proton pump inhibitors, but her symptoms did not improve.

An abdominal ultrasound (AUS) showed a possible stone in the gallbladder neck, with a thickened and oedematous gallbladder wall (Figure 1). No masses were noted on sonar. The history of loss of weight was further investigated. A colonoscopy was performed, which was normal. A computed tomography (CT) scan did not show any concerning features, and a thickened gallbladder wall was once again visualised (Figure 2, 3).

The patient's liver functions tests, full blood count, and renal functions were within the normal ranges. The human immunodeficiency virus (HIV) serology test was negative.

A laparoscopic cholecystectomy was done which demonstrated a thick-walled and diseased gallbladder with empyema.

She recovered well and was discharged home on the first day postoperatively. She was followed up 2 weeks later and reported improvement in her symptoms.

Histology of the gallbladder showed an increased wall thickness of 5 mm (normal range < 3 mm), with no gallstones identified and no tumour nodules visible. Microscopically, there were areas of ulceration and extensive stromal fibrosis with a chronic inflammatory cell infiltrate in the stroma. Necrotising granulomatous inflammation was observed with further histochemistry positive for acid-fast bacilli on modified Ziehl-Neelsen testing.

Further testing showed a negative *Mycobacterium tuberculosis* GeneXpert polymerase chain reaction (PCR) test for sputum as well as no growth of *Mycobacterium tuberculosis* on BACTEC blood culture after 42 days.

The patient did not show any clinical, radiological, or microbiological evidence of pulmonary or other extrapulmonary TB (EPTB), from where seeding could have occurred to the gallbladder itself. The patient was commenced on a six-month anti-tubercular treatment (ATT) regimen despite presumed source control following her cholecystectomy. The chronic rheumatoid arthritis

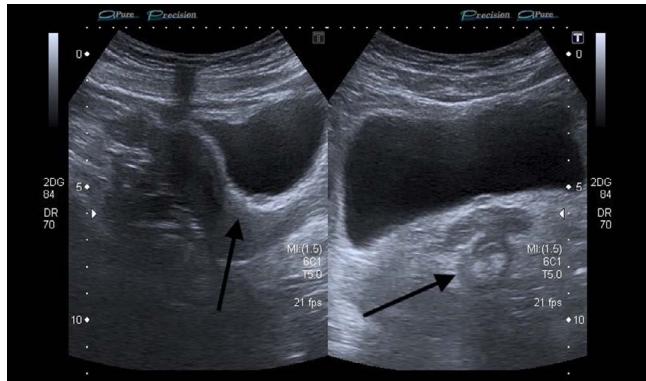


Figure 1: AUS demonstrating gallbladder wall thickening with oedema (black arrow – left) as well as possible cholelithiasis in the neck of the gallbladder (black arrow – right)



Figure 2: Coronal view of contrasted CT of the abdomen demonstrating gallbladder wall thickening (black arrow)



Figure 3: Axial view of contrasted CT of the abdomen demonstrating gallbladder wall thickening with a surrounding hypodense layer of oedema, mimicking pericholecystic fluid (black arrow)

medication was not stopped during this period. The patient reported resolution of all symptoms and adequate weight gain at both her three month and six month follow-up.

Discussion

Gallbladder TB (GBTB) is an exceedingly rare manifestation of EPTB, even in regions where TB is endemic, such as in South Africa.¹ EPTB accounts for approximately 15–20% of all TB cases in immunocompetent individuals and up to 50% in immunocompromised populations, particularly those with HIV infection.^{2,3}

Among the many forms of EPTB, involvement of the gallbladder is exceptionally uncommon, with fewer than 120 cases reported in the literature to date.⁴ The inhibitory and bacteriostatic properties of bile, as well as a limited lymphatic supply, benefit the gallbladder with an intrinsic resistance to *Mycobacterium tuberculosis*, rendering infection uncommon.¹

When GBTB does occur, it is usually part of disseminated disease, and isolated involvement without other organ involvement is rare.^{5,6} With disseminated disease,

transmission to the gallbladder typically occurs through hematogenous, lymphatic, or peritoneal routes.^{5,6} However, gallbladder pathology, such as cholelithiasis or cystic duct obstruction, appears to be a key predisposing factor in isolated infection. Over 70% of reported cases coincide with gallstones or ductal obstruction, facilitating stasis and colonisation.¹

Clinically, GBTB proves to be a diagnostic challenge. Common presentations include right upper quadrant pain, fever, weight loss, jaundice, or a combination thereof, often mimicking cholecystitis or gallbladder carcinoma.^{5,6}

Radiologically, CT and ultrasound findings are non-specific, ranging from wall thickening to mass-like lesions with necrosis or calcification.⁶⁻⁸ These features overlap significantly with gallbladder malignancy or chronic inflammation,^{6,8} making preoperative diagnosis challenging. Radiologic “red flags” suggesting TB over carcinoma include gallbladder wall with necrotic core, multiple flecked calcifications, broad-based micronodular lesions, pericholecystic oedema, and necrotic lymph nodes.⁶ Consequently, in the absence of systemic TB features or pulmonary symptoms, most diagnoses hinge on postoperative histopathology, where necrotising granulomas with or without acid-fast bacilli confirm the diagnosis.⁹

Although uncommon, isolated GBTB should be considered in the differential diagnosis of gallbladder masses, particularly in endemic regions. Key differentials include acute/chronic cholecystitis, gallbladder carcinoma, and benign or malignant polypoid lesions.⁶ However, diagnostic certainty, as mentioned, requires histopathology.⁶

Surgical removal with cholecystectomy or radical resection where carcinoma is suspected, followed by a regimen of ATT for six months, is typical.^{9,10} The prognosis is excellent when timely ATT is administered.^{9,10} The rarity and non-specific presentation underline the importance of considering TB when evaluating gallbladder lesions, particularly in endemic areas or patients with risk factors and confirmed immunosuppression.^{9,10}

Isolated GBTB is a diagnostic challenge. Its presentation can masquerade as a myriad of disease processes with no extra-gallbladder involvement. Most cases are diagnosed postoperatively following cholecystectomy for presumed cholecystitis or gallbladder carcinoma. In endemic areas, surgeons and radiologists can consider a diagnosis of GBTB, especially in patients with gallbladder wall thickening or empyema, jaundice, weight loss, or imaging mimicking carcinoma.¹¹

In our case report, our patient presented with signs and imaging features that warranted surgical intervention, with weight loss being the only symptom that prompted us to investigate further. All specimens should be sent for histology, however, as it remains the diagnostic gold standard. Combined surgical and medical therapy yields excellent outcomes.

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Conflict of interest

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Ethical approval

Ethical approval was granted by the research ethics committee, University of Cape Town, Faculty of Health Sciences, Human Research Ethics Committee (Ref: 201/2025).

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