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Case report

Xanthogranulomatous Cholecystitis: A Case Report of Chronic Cholecystitis Mimicking Gallbladder Carcinoma

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Abstract
Xanthogranulomatous cholecystitis (XGC) is an uncommon, benign but locally destructive inflammatory variant of chronic cholecystitis, characterized histologically by the accumulation of lipid-laden macrophages within a fibro-inflammatory gallbladder wall. Its clinical and radiological features frequently overlap with those of gallbladder carcinoma, posing a significant diagnostic challenge. We report the case of a patient in the seventh decade of life who presented with right upper quadrant pain, low-grade fever, and anorexia. Imaging and histopathological examination after cholecystectomy confirmed chronic xanthogranulomatous cholecystitis without evidence of malignancy. A high index of suspicion, guided by multidisciplinary correlation of clinical, radiological, and histological findings, is essential to avoid unnecessary radical surgery for a benign condition that can closely mimic gallbladder cancer.
Keywords: Xanthogranulomatous Cholecystitis, Chronic Cholecystitis, Gallbladder Carcinoma Mimicker, Lipid-Laden Macrophages.

Introduction

Xanthogranulomatous cholecystitis (XGC) is a rare inflammatory disease of the gallbladder characterized by the presence of xanthogranulomas — yellowish nodular deposits within the gallbladder wall — frequently associated with gallstones (1). In some cases, XGC can closely resemble gallbladder carcinoma (GBC), particularly when it adopts a pseudo-tumoral form and extends into neighboring organs (1).

The pathogenesis of XGC is thought to involve inflammation that damages the Rokitansky-Aschoff sinuses within the gallbladder wall, triggering an intense inflammatory response (1). Its true incidence remains unclear, ranging from 0.7% to 13.2% of all inflammatory gallbladder pathologies (2). Symptoms are nonspecific and can resemble those of acute or chronic cholecystitis (3). In patients with underlying comorbidities, XGC may raise particular concern for GBC (3). XGC can also present acutely as a complication of gallstone migration (3). While ultrasound and CT can provide suggestive findings, magnetic resonance imaging (MRI) offers more specific diagnostic information (4). In diagnostically difficult cases, biopsy may be required to exclude malignancy (3) definitively. Once GBC has been ruled out, laparoscopic cholecystectomy is typically the treatment of choice for XGC, despite a higher associated risk of complications (3).

This case report describes the clinical and radiological features of XGC and its surgical outcome, with the aim of clarifying the most appropriate diagnostic and therapeutic approach. This work has been reported in line with the SCARE 2023 guidelines (5).

Case Presentation

A patient in the seventh decade of life presented with a several-week history of intermittent right upper quadrant pain, low-grade fever, and anorexia, associated with nausea but without jaundice. There was no history of general clinical deterioration. Examination revealed mild tenderness in the right hypochondrium with a palpable gallbladder.

Initial abdominal ultrasound demonstrated a distended gallbladder with thickened walls and multiple pericholecystic collections. Given the suspicious appearance of the gallbladder, an abdominal CT scan was performed and confirmed the ultrasound findings (Fig. 1). Further evaluation with MRI showed a distended gallbladder with irregular wall thickening and surrounding fat stranding, suggestive of xanthogranulomatous cholecystitis (Fig. 2). The patient underwent surgery via a subcostal approach. Intraoperatively, no peritoneal carcinomatosis or hepatic metastasis was identified. Histological examination confirmed chronic xanthogranulomatous cholecystitis without evidence of malignancy.

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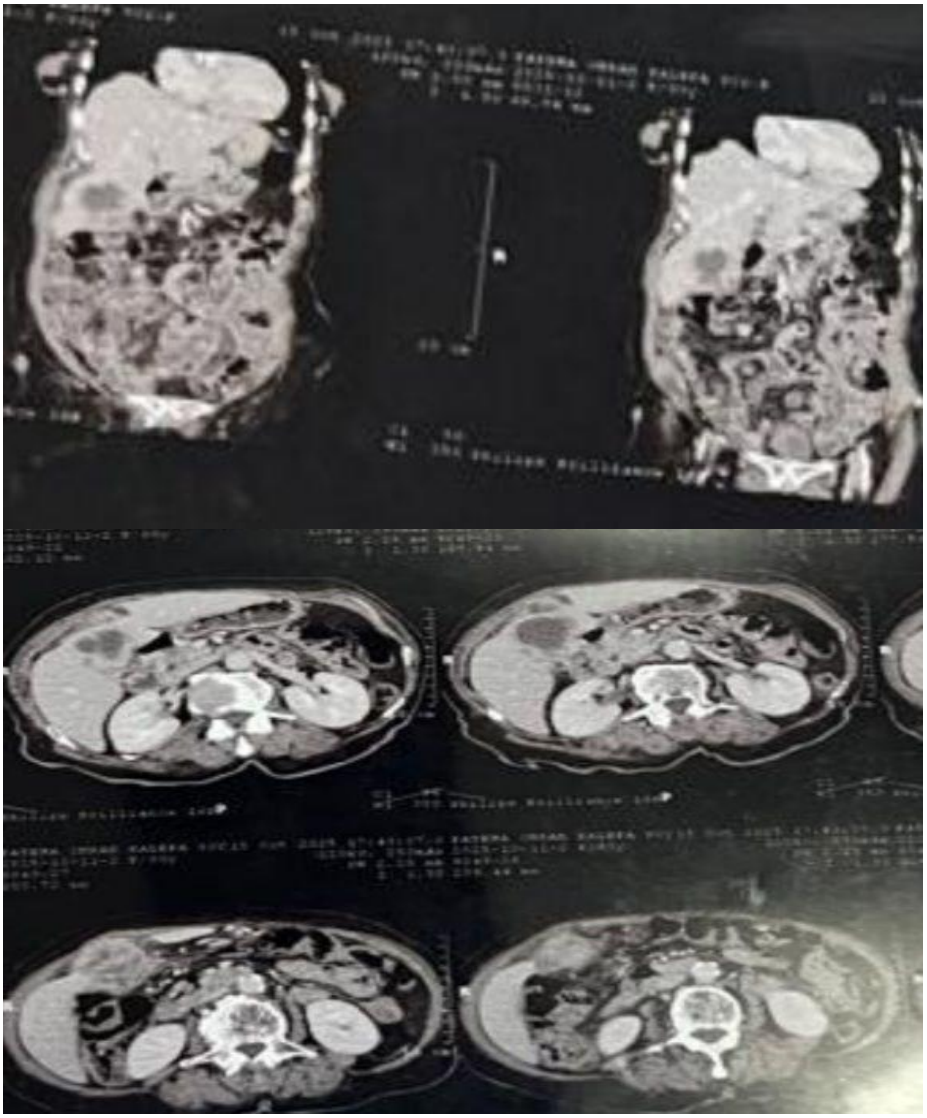

Figure 1. Computed tomography imaging showing xanthogranulomatous cholecystitis. Coronal(A) and axial (B)scans of the abdomen display diffuse thickening of the gallbladder wall; the border between the gallbladder and liver is indistinct.

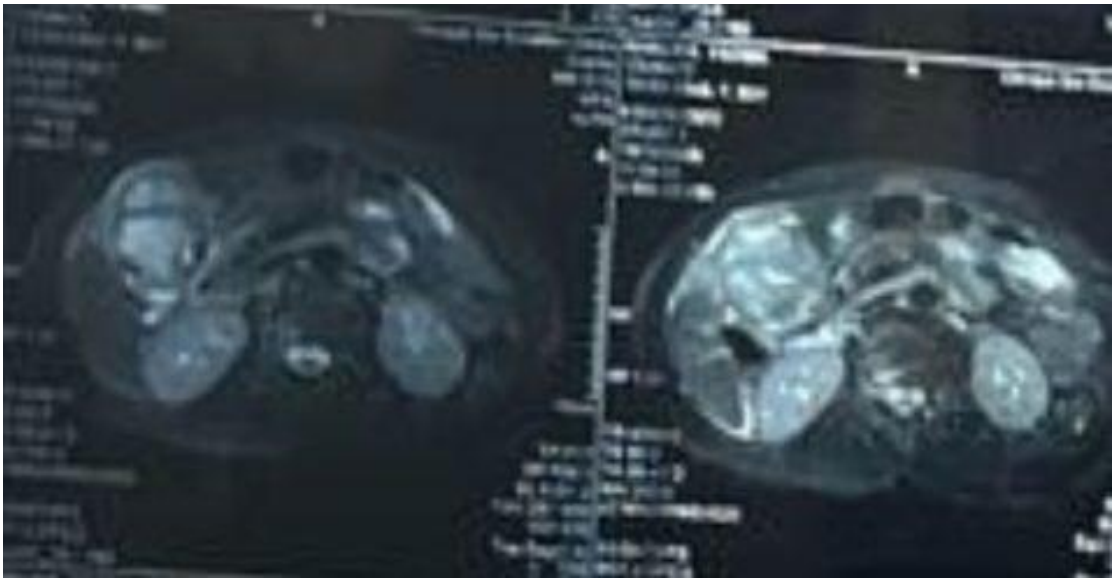

Figure 2. T2W axial MRI scan (A, B). A dilated, multiseptated gallbladder with irregularly thickened wall

Discussion

Xanthogranulomatous cholecystitis (XGC) is a rare inflammatory disease of the gallbladder characterized by marked proliferation of fibrotic tissue accompanied by an accumulation of lipid-laden macrophages and acute and chronic

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inflammatory cells (1). Although benign, XGC often extends into neighboring organs, and its macroscopic appearance may be mistaken for gallbladder cancer (1,5). XGC affects both sexes without significant predominance (6). The mean age of operated patients is 53 years (range: 49–62 years), although the condition can rarely occur in children or adolescents (6). Clinical symptoms are usually nonspecific, presenting as either acute or chronic cholecystitis (7). Between one third and three quarters of XGC cases are diagnosed in the emergency setting (8). In the context of chronic gallbladder inflammation with recurrent cholecystitis-like episodes, common findings include fever and recurrent abdominal pain over an average duration of 11 months (8).

Serological evaluation remains nonspecific and does not reliably aid diagnosis. Derangement of liver function tests or elevation of inflammatory markers (white cell count or C-reactive protein) may correspond with episodes of XGC (9). Tumor markers such as CA19-9, although correlating well with cholangiocarcinoma, may also be elevated in isolated cases of XGC and therefore provide no diagnostic certainty (9). A literature review identified 111 cases with recorded CA19-9 values, of which nearly two-thirds (63%) showed elevated levels (9). The imaging characteristics of XGC closely resemble those of gallbladder cancer, including wall thickening and involvement of neighboring organs (3,9).

Ultrasonography typically reveals focal or diffuse thickening of the gallbladder wall, often accompanied by gallstones and intramural hypoechoic nodules (6). CT findings support these observations and aid in differentiating XGC from gallbladder cancer (10). More specifically, CT diagnostic criteria for XGC include diffuse gallbladder wall thickening, continuity of the mucosal line, presence of intramural hypoattenuating nodules, and absence of invasion into the adjacent liver parenchyma (6,11). On MRI, intramural T2 hyperintensity is a key diagnostic feature that helps distinguish XGC from gallbladder cancer (11). Regions of T2 hyperintensity correlate with areas rich in xanthogranulomas (11); however, in the absence of contrast enhancement, these regions may also represent necrosis or abscess formation (11).

Surgery remains the definitive treatment for XGC (12). Simple cholecystectomy is usually sufficient (3). XGC can erode the gallbladder wall, produce dense fibrotic adhesions to surrounding organs, and result in fistula formation with adjacent structures, further mimicking gallbladder cancer (6). Intraoperative differentiation between XGC and gallbladder carcinoma remains challenging, particularly in cases involving tumor-like masses and adhesion to adjacent organs (12). Intraoperative frozen-section analysis is useful for distinguishing between the two conditions and helps avoid unnecessarily extensive surgery (1). Given the possibility of coexisting GBC and XGC, radical resection — such as partial hepatectomy — may be justified when malignancy cannot be definitively excluded (6).

Laparoscopic cholecystectomy, the gold standard for benign gallbladder disease, is often technically challenging in cases of XGC (12). Chronic inflammation associated with XGC can compromise the integrity of the gallbladder wall, causing irregular borders, advanced fibrotic adhesions, and biliary fistulas (12). As a result, several studies suggest that the laparoscopic approach may not be suitable for XGC (13,14). The rate of conversion to open surgery is higher in patients with XGC than in those with other forms of cholecystitis, ranging from 10% to 80% (12,14). Many authors recommend open cholecystectomy when malignancy is suspected preoperatively or when severe adhesions are present (14). Qasaimeh et al. opted for direct open cholecystectomy in seven patients with preoperative suspicion of tumor, reporting a 31.4% conversion rate among cases that began laparoscopically (15). The same study noted that the incidence of conversion was ten times higher in XGC cases than in other cholecystectomy series (14,15). This elevated conversion rate has been attributed to difficulty in identifying the anatomy and controlling intraoperative bleeding (13,14).

Conclusion

Managing xanthogranulomatous cholecystitis (XGC) poses significant diagnostic and therapeutic challenges owing to its rarity and its potential resemblance to gallbladder carcinoma (4,6). This case underscores the importance of a multidisciplinary approach involving surgeons, radiologists, and pathologists in the management of XGC. Larger-scale studies are needed to refine diagnostic methods and therapeutic strategies, ultimately improving patient outcomes.

Conflict of interest. Nil

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