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THE MALIGNANT MIMICKER: XANTHOGRANULOMATOUS CHOLECYSTITIS PRESENTING AS SUSPECTED GALLBLADDER CARCINOMA

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ABSTRACT

Xanthogranulomatous cholecystitis (XGC) is a rare, destructive inflammatory disease of the gallbladder that frequently mimics gallbladder carcinoma (GBC) both clinically and radiologically, often resulting in radical surgical intervention. We report a 75-year-old female presenting with right upper quadrant palpable mass with pain, nausea, vomiting, jaundice, anorexia, and significant weight loss. Contrast-enhanced computed tomography (CECT) demonstrated diffuse irregular gallbladder wall thickening, pericholecystic fat stranding, and hepatic interface loss with segments IVb and V, and inramural hypoattenuating nodules. Given strong suspicion of malignancy, extended cholecystectomy with wedge hepatic resection and lymphadenectomy was performed. Histopathology revealed lipid-laden macrophages, multinucleated giant cells, and dense fibrosis without evidence of dysplasia or carcinoma confirming XGC. This case underscores the persistent diagnostic dilemma between XGC and GBC and highlights the importance of careful radiologic interpretation and intraoperative decision-making. Histopathology remains the definitive diagnostic modality.

KEYWORDS

Xanthogranulomatous cholecystitis; Gallbladder carcinoma; Extended cholecystectomy; Differential diagnosis; Radiology-pathology correlation.

INTRODUCTION

Xanthogranulomatous cholecystitis (XGC) is an uncommon variant of chronic cholecystitis characterized by focal or diffuse destructive inflammation of the gallbladder wall with accumulation of lipid-laden macrophages, fibrosis, and marked adhesions to adjacent structures. Reported incidence ranges from 0.7% to 10% of cholecystectomy specimens.

Despite being a benign entity, XGC frequently simulates gallbladder carcinoma (GBC) in clinical presentation, radiological appearance, and intraoperative findings. Mass-like wall thickening, hepatic infiltration, and regional lymphadenopathy may be indistinguishable from malignancy. Consequently, patients often undergo extended oncologic resections.

The present case illustrates the diagnostic challenge posed by XGC and emphasizes imaging-pathology correlation and surgical decision-making strategies to avoid overtreatment while maintaining oncologic safety.

CASE REPORT

A 75-year-old woman presented with right upper quadrant lump and progressive pain for 1.5 years, associated with nausea, vomiting, jaundice, anorexia, and approximately 6 kg weight loss. Patient was a known case of Type II Diabetes Mellitus since 2 years- drug defaulter.

There was no prior history of hepatobiliary surgery.

On examination, she had mild icterus and tenderness in the right hypochondrium. A palpable mass was present in the right upper quadrant.

Laboratory Investigations

Biochemical evaluation revealed:

- Elevated alkaline phosphatase and gamma-glutamyl transferase
- Mild hyperbilirubinemia
- Borderline elevation of CA 19-9
- Borderline elevation of Carcinoembryonic antigen

The biochemical profile suggested obstructive pathology but was not diagnostic.

Radiological Findings

Contrast-enhanced CT Of The Abdomen Demonstrated:

- Diffuse irregular gallbladder wall thickening
- Heterogeneous enhancement
- Marked pericholecystic fat stranding
- Loss of fat planes with hepatic segments IVb and V
- Multiple intramural hypoattenuating nodules

These findings raised strong suspicion for locally advanced GBC with hepatic infiltration. However, the presence of intramural nodules suggested a possible inflammatory etiology such as XGC.

Operative Findings

Diagnostic Laparoscopy revealed a markedly thickened, firm gallbladder densely adherent to the liver bed and duodenum. The hepatocystic interface appeared obliterated. Regional lymph nodes were enlarged but not grossly metastatic.

Given high oncologic suspicion and inability to exclude malignancy intraoperatively, Open extended cholecystectomy was performed, including wedge resection of liver segments IVb and V and regional lymphadenectomy.

Histopathology

Gross examination showed a thickened gallbladder wall with yellowish nodular areas.

Microscopic examination revealed:

- Abundant foamy histiocytes
- Multinucleated giant cells
- Dense fibro-inflammatory reaction
- Chronic inflammatory infiltrate
- Absence of dysplasia or invasive carcinoma

Lymph nodes showed reactive hyperplasia without metastasis.

The final diagnosis was Xanthogranulomatous Cholecystitis.

The postoperative course was uneventful. The patient was discharged on postoperative day 3 and remains well at follow-up.

DISCUSSION

XGC is thought to result from bile extravasation into the gallbladder wall secondary to mucosal ulceration or obstruction of Rokitansky–Aschoff sinuses. This leads to accumulation of lipid-laden macrophages and progressive fibrosis, producing mass-like thickening and dense adhesions.

Diagnostic Dilemma

The primary challenge lies in differentiating XGC from GBC preoperatively. Both entities may present with:

- Weight loss
- Jaundice
- Elevated tumor markers
- Hepatic infiltration on imaging

Radiological features favoring XGC include:
- Diffuse wall thickening rather than focal mass
- Intramural hypoattenuating nodules
- Continuous mucosal line
- Absence of significant bile duct dilation

In contrast, features suggesting malignancy include focal mass lesion, vascular encasement, significant lymphadenopathy, and biliary obstruction.

However, overlap remains considerable. CT sensitivity and specificity for differentiating XGC from GBC have been reported around 70–80%, underscoring diagnostic limitations.

Radiology–Pathology Correlation

Intramural hypodense nodules correspond histologically to xanthogranulomas composed of foamy macrophages. Diffuse thickening reflects fibrosis and chronic inflammation. Inflammatory FDG uptake on PET/CT may further mimic malignancy.

Importantly, coexisting carcinoma has been reported in 2–15% of XGC cases, justifying cautious surgical planning.

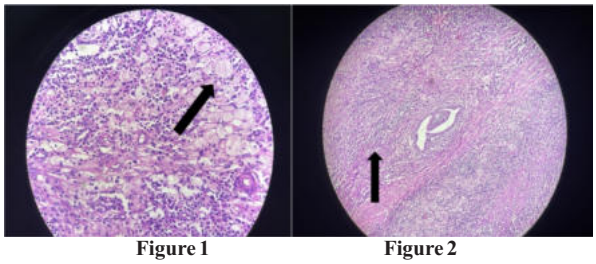

Figure 1 **Figure 2**

Histopathology: H&E stained slides: Figure 1 showing foamy macrophages and Figure 2 showing transmural inflammation

Surgical Considerations

Laparoscopic cholecystectomy is frequently challenging in XGC due to dense adhesions and distorted anatomy, leading to high conversion rates. When malignancy cannot be confidently excluded pre- or intraoperatively, extended resection remains justified.

Intraoperative frozen section analysis may assist in decision-making; however, sampling error is possible. A multidisciplinary evaluation incorporating radiology, surgical judgment, and pathology is essential. This case reinforces that while avoidance of unnecessary radical surgery is desirable, oncologic principles must not be compromised when malignancy remains a significant possibility.

CONCLUSION

Xanthogranulomatous cholecystitis is a benign yet aggressive inflammatory condition that closely mimics gallbladder carcinoma clinically, radiologically, and intraoperatively. Despite advances in imaging, reliable preoperative differentiation remains imperfect. Careful assessment of radiologic features and judicious use of intraoperative pathology may reduce overtreatment. Nevertheless, when malignancy cannot be excluded, extended resection remains oncologically prudent. Definitive diagnosis rests on histopathology.

Declarations

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Conflict Of Interest: None declared.

Ethical Approval: Not required for case report.

Informed Consent: Written informed consent was obtained from the patient for publication of this report and images.

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