ORIGINAL RESEARCH

Xanthogranulomatous cholecystitis: Our experience in 15 cases at Yenepoya medical college, Mangalore

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ABSTRACT
Xanthogranulomatous cholecystitis (XGC) is an uncommon inflammatory ailment impacting the gallbladder. It is distinguished by the infiltration of lipid-laden macrophages, resulting in a yellowish hue, along with persistent inflammation. Regarded as a more aggressive variant of chronic cholecystitis, a prevalent inflammatory condition of the gallbladder, Xanthogranulomatous cholecystitis showcases distinctive characteristics. Despite its infrequency, Xanthogranulomatous cholecystitis underscores the significance of swift and accurate diagnosis. The inflammatory alterations linked to XGC may give rise to severe complications, necessitating surgical intervention to alleviate symptoms and impede further advancement of the disease. This investigation endeavors to elucidate our encounters with 15 cases, contributing to the understanding of this rare condition.

Key words: Xanthogranulomatous cholecystitis, experience, tertiary hospital, gall bladder

INTRODUCTION

Xanthogranulomatous cholecystitis (XGC) is a rare and inflammatory disease that affects the gallbladder. This condition is characterized by the infiltration of yellowish, lipid-laden macrophages and chronic inflammation.[1]Xanthogranulomatous cholecystitis is considered an aggressive form of chronic cholecystitis, a more common inflammatory disorder of the gallbladder. The term "xanthogranulomatous" is derived from the Greek words "xanthos", meaning yellowand "granuloma", referring to a tissue reaction involving the aggregation of immune cells. In XGC, the gallbladder undergoes significant changes in its structure and composition, leading to the formation of granulomas containing foamy macrophages, inflammatory cellsand fibrous tissue. The exact cause of Xanthogranulomatous cholecystitis is not fully understood, but it is believed to be associated with long-standing gallbladder inflammation and obstruction of the bile ducts.[2] Conditions such as gallstones, chronic infection, and anatomical abnormalities may contribute to the development of XGC. The chronic irritation and inflammation trigger an abnormal immune response, leading to the accumulation of lipid-laden macrophages and the formation of granulomas.[3] Clinically, XGC can present with symptoms similar to other gallbladder disorders, such as right upper abdominal pain, nausea, vomiting, and fever. However, XGC often poses a diagnostic challenge due to its rarity and the similarity of symptoms to other gallbladder diseases. Imaging studies, including ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI), are essential for diagnosing Xanthogranulomatous cholecystitis.[4,5] These tests can reveal thickening of the gallbladder wall, the presence of intramural hypoechoic nodules, and signs of inflammation. Histopathological examination of the gallbladder tissue obtained through surgery is crucial for confirming the diagnosis of XGC. Microscopic analysis typically shows the infiltration of foamy macrophages, chronic inflammatory cells, and fibrous tissue. The characteristic yellow coloration of the affected tissue is due to the accumulation of lipids within the macrophages. The treatment of Xanthogranulomatous cholecystitis usually involves

surgical intervention, as the disease is often associated with complications such as gallbladder rupture or the formation of abscesses. Cholecystectomy, the surgical removal of the gallbladder, is the standard treatment for XGC.[6,7] In some cases, the inflammatory changes may extend beyond the gallbladder, requiring additional procedures to address complications. Despite being a rare condition, Xanthogranulomatous cholecystitis highlights the importance of prompt and accurate diagnosis. The inflammatory changes associated with XGC can lead to serious complications, and surgical intervention is often necessary to alleviate symptoms and prevent further progression of the disease. In conclusion, Xanthogranulomatous cholecystitis is a rare and aggressive inflammatory disorder of the gallbladder characterized by the infiltration of lipid-laden macrophages and chronic inflammation. While the exact cause is not fully understood, it is often associated with long-standing gallbladder inflammation and obstruction.[8,9] Timely diagnosis through imaging studies and histopathological examination is crucial for appropriate management, which typically involves surgical removal of the gallbladder. Understanding this condition is essential for healthcare professionals to provide effective and timely interventions for affected individuals. This study puts in an effort to explain our experience in 15 cases that we have encountered.

MATERIALS AND METHODS

We conducted an analysis using a database of patients who underwent surgery at our hospital and were diagnosed with XGC during the period from January2023 to January2024. 15 cases were determined to align with the histological diagnosis of XGC. An independent pathologist reviewed their gallbladder specimens again. Their preliminary diagnosis, surgical records, and histological findings were gathered and examined.

The study was carried out in compliance with the Declaration of Helsinki (updated in 2013). The retrospective study obtained approval from the Ethics Committee and was exempted from the requirement of informed consent.

STATISTICAL ANALYSIS

The percentage value was calculated.

RESULTS

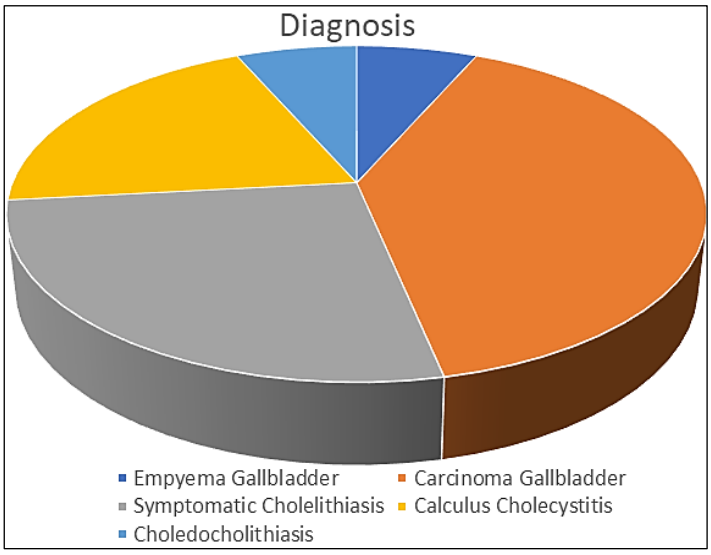
- **Total number of cases-15.**
- **All fifteen cases the HPE reported to be**Xanthogranulomatous cholecystitis.

Table 1: Sex Distribution

Male	10
Female	5

Table 2: Diagnosis

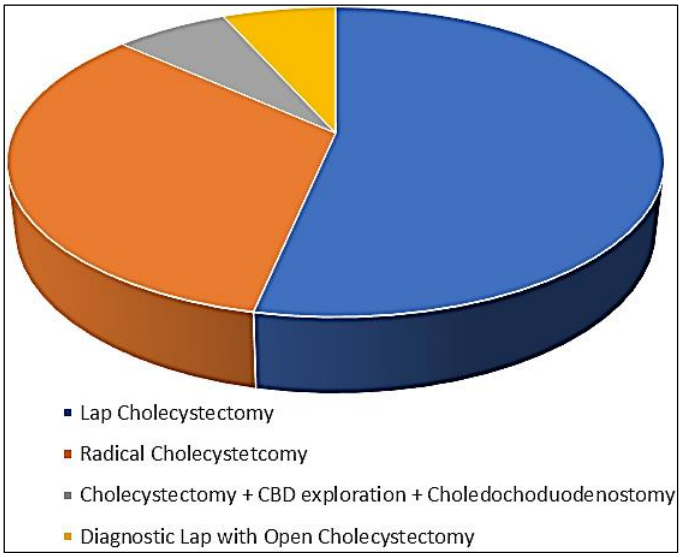
Diagnosis	Frequency	Percentage
Empyema Gallbladder	1	6.66
Carcinoma Gallbladder	6	40
Symptomatic Cholelithiasis	4	26.6
Calculus Cholecystitis	3	20
Choledocholithiasis	1	6.66



Graph 1: Diagnosis

Table 3: Procedure

Procedure	Frequency	Percentage
Lap Cholecystectomy	8	53.33
Radical Cholecystetcomy	5	33.33
Cholecystectomy + CBD exploration + Choledochoduodenostomy	1	6.6
Diagnostic Lap with Open Cholecystectomy	1	6.6



Graph 2: Procedure

DISCUSSION

XGC, or xanthogranulomatous cholecystitis, is an uncommon disease affecting the gallbladder. It is characterised by an aggressive and destructive inflammatory process. The occurrence of XGC has been found to range from 0.7% to 13.2% among all cases of gallbladder-related inflammation (4,6). XGC predominantly impacts individuals in the later stages of life, typically in their sixth or seventh decade, and affects both genders equally (7).Xanthogranulomatouscholecystitis (XGC) is histologically distinguished by the presence of persistent inflammatory alterations, the detection of bile within the gallbladder wall and the engulfment of lipids by macrophages (8). The prevailing opinion regarding the cause and development of XGC is that it occurs when the Rokitansky-Aschoff sinuses rupture and bile leaks into the wall of the gallbladder. The gallbladder wall thickens significantly and many nodules, coloured yellowish-brown, form due to widespread inflammatory fibrosis. This condition often extends to nearby organs such as the liver, omentum, colon, stomach, and duodenum (9,10). Obstructive jaundice (11) frequently occurs when the enlarged wall of the gallbladder applies pressure on the common bile duct (CBD). An episode of severe inflammation of the gallbladder occurring within a period of six months suggests the presence of Xanthogranulomatous cholecystitis (XGC). Nevertheless, XGC is frequently misinterpreted as GBCa, resulting in avoidable extensive surgical removal. Ultrasonography is advantageous for detecting the thickness of the gallbladder wall (either localised or diffuse), cholecystolithiasis, and intramural hypoechoic nodules. Lee observed some characteristics on ultrasonography that indicated the presence of XGC. These features were the thickness of the gallbladder wall, the presence of cholecystolithiasis, and infiltration into nearby tissues (12). Abdominal CT can also validate these results.

Common observations of XGC on CT scans consist of widespread thickening of the gallbladder wall, hypodense nodules within the wall, infiltration around the gallbladder, and the presence of a hepatic abscess (10). In CT scans, intramural hypodense nodules were identified as a highly unique characteristic of XGC. This feature was observed in around 33% of patients (13). The surgical management of XGC poses difficulties, as the only definite therapeutic option is cholecystectomy, which can be performed either as a total removal or a partial removal. Ghosh determined that 65% of patients with XGC experienced complications during total cholecystectomy, leading to the need for partial cholecystectomy in 35% of patients due to significant adhesion between the gallbladder and surrounding tissue (14). Open cholecystectomy is the suggested surgical treatment due to the presence of dense fibrous adhesion, severe local inflammation and the potential risk of concurrent malignancy. The laparoscopic method is not demonstrated for XGC, and open methods are frequently employed initially due to the suspicion of cancer and/or the expectation of technical challenges. The conversion percentage from LC to open was observed to range from 19% to 80% (1). If XGC was accurately diagnosed during the surgery, a simple

cholecystectomy was deemed sufficient treatment (14). Nevertheless, when adjacent organs are affected, it may be necessary to do a more thorough surgical removal, even if it was already known before the operation that the underlying condition was completely non-cancerous.

CONCLUSION

Precision in preoperative diagnosis posed a challenge, yet it proved advantageous in preventing an overly prolonged cholecystectomy.

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