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A Case Report on Chronic Xanthogranulomatous Cholecystitis

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Abstract: Xanthogranulomatous cholecystitis is an uncommon form of cholecystitis often being misdiagnosed as gallbladder carcinoma, hence poses as a diagnostic challenge for physicians. The proposed mechanism of the formation of this lesion is through mucosal ulceration or the rupture of Rokitansky-Aschoff sinuses due to increased intraluminal pressure. This causes granulomatous changes that lead to the formation of intramural nodules. Due to its nature of presenting as a gallbladder mass, certain surgical interventions can become unwarranted, which may diminish the patient's quality of life. This paper presents a case of a 59-year-old male who presented with epigastric pain, initially treated as reflux disease, relieved by antacids, antispasmodics and opioid analgesics. The imaging studies revealed a mass in the gallbladder with signs of cholecystitis. The patient underwent intra-operative ultrasound, extended cholecystectomy and lymph node dissection with an unremarkable postoperative course. The final histopathology revealed chronic xanthogranulomatous cholecystitis and was negative for malignancy. This paper further reviews the presentation of the lesion under different imaging modalities. On ultrasound, it appears as a hypoechoic focus and marked or focal thickening of the gallbladder wall, while on computed tomography, it presents with hypoattenuating nodules in thickened walls, luminal surface enhancement with continuous mucosal lines. While on magnetic resonance imaging, it may appear as either a reduced signal intensity on out of phase images or slightly high signal intensity and slight enhancement on early phase and strong enhancement on the late phase. In general, the recommended treatment approach is through open cholecystectomy.

Keywords: Xanthogranulomatous Cholecystitis, Gallbladder, Case Report

1. Introduction

Xanthogranulomatous cholecystitis (XGC) is a rare histopathological diagnosis of focal or diffuse acute and chronic cholecystitis, with an incidence ranging between 0.7-10% [1]. It usually presents with non-specific signs and symptoms similar to a patient who presents with the typical cholecystitis. The pathophysiology of which can be derived from the involvement of Rokitansky-Aschoff sinuses and liberation of bile lipids into the adjacent tissue. It is frequently misdiagnosed as gallbladder carcinoma in terms of clinical presentation, radiologic (gall bladder wall thickening, intramural hypoattenuated nodules, continuous mucosal line enhancement), and intra-operative findings. This often leads to an erroneous diagnosis resulting in inappropriate surgical intervention (i.e. extended cholecystectomy for simple XGC or a laparoscopic cholecystectomy for a missed diagnosis of gallbladder cancer).

2. Case Report

2.1. Patient Information

This is a case of a 59-year-old Filipino male, who initially presented with epigastric pain, gradually increasing in severity within a few hours, described as non-radiating, crampy in character, and post-prandial. The patient self-medicated with an anti-spasmodic and an antacid which didn't provide any relief. The patient then sought consult at a local hospital where he was given intravenous tramadol, which provided relief of the abdominal pain. He was

assessed to have acid peptic disease and was prescribed with an antacid, an anti-spasmodic, and an opioid analgesic. The patient completed the prescription for two weeks, without any recurrence of pain. On his follow-up with his physician, an ultrasound was requested which revealed the following: hepatomegaly with steatosis, cholecystolithiasis, gallbladder adenomyomatosis and/or cholecystitis. The patient was referred to a surgeon and an MRI with MRCP was requested, which revealed a small loculated peripherally enhancing collection in the gallbladder fossa, an indistinct liver and gallbladder border, in which a neoplasm was suspected. Other findings revealed signs of cholecystitis, prominent to enlarged peripancreatic lymph nodes, and a common bile duct (CBD) stone. The patient was subsequently admitted for ERCP and cholecystectomy.

2.2. Clinical Findings

The patient's physical examination was essentially normal except for a BMI of 31.

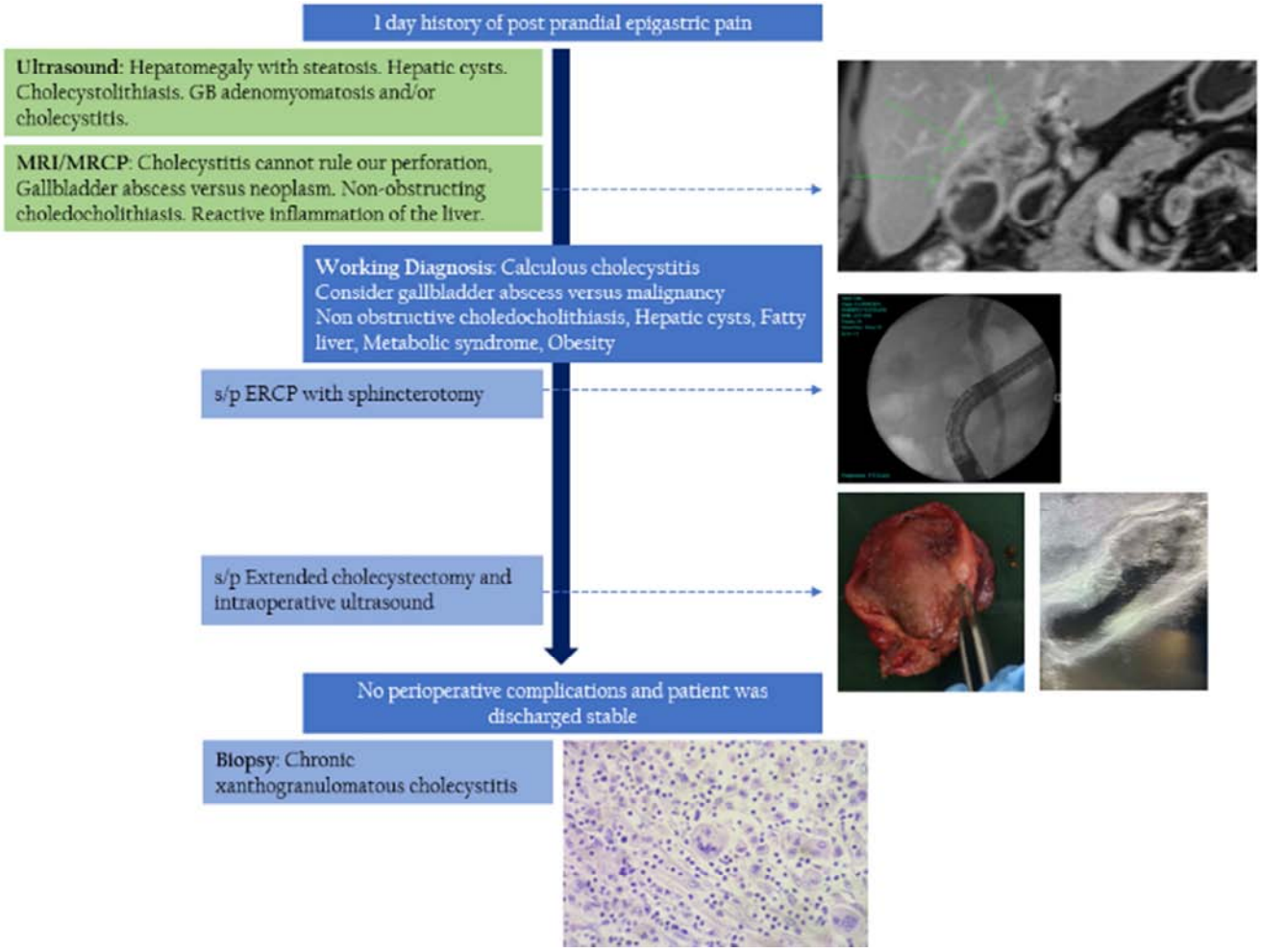

Figure 1. *Case report timeline according to the CARE Guidelines.*

2.3. Diagnostic Assessment

The ultrasound revealed an enlarged liver with mildly increased reflectivity of its parenchyma with area of sparing at the pericholecystic region; A 1x0.7x0.9cm cyst at the caudate lobe; The gallbladder had an intraluminal non shadowing echogenicity measuring 0.7 cm, the wall is thickened and edematous at the region of the body and neck, adjacent to this is a heterogenous predominantly hyperechoic focus with a cystic foci measuring 7.8x6.6x5mm, there was minimal vascularity detected, and the CBD was not dilated. Other initial laboratory workups included: CBC revealing normal hemoglobin, hematocrit, platelet count, leukocytosis (13.26x10^9/L) with neutrophilic predominance (63%); Prothrombin time was 111% activity with an INR 0.94. The blood chemistries (BUN, Crea, Albumin, SGPT, SGOT, NA, K, TB, DB, IB) were all within normal limits.

The findings on the ultrasound (with attention to the hyperechoic focus) led the surgeon to do an upper abdominal MRI/MRCP with contrast revealing the following: no biliary ductal dilatation with the CBD measuring 0.6 cm. There is a tiny (0.4 cm) focus of hypointense T2 signal involving the distal most CBD, likely representing a non-obstructing CBD stone. The pancreatic duct is normal in caliber. There was a small, loculated, peripherally enhancing collection in the GB fossa with restricted diffusion. The GB was distended with a

tiny 0.3cm filling defect seen near the fundal wall, which may represent a tiny polyp or a wall adherent stone. The GB wall was thickened which may demonstrate enhancement and restricted diffusion. The coronal T1 VIBE post GD shows at least three apparent small defects in the superior GB wall. The liver is normal in size. There were at least two (up to 1 cm) hypoenhancing cystic lesions involving segment V and caudate lobe probably representing hepatic cysts. A wedge-shaped area of transient arterial hyperenhancement involving anterior and medial hepatic segments (IVa, IVb, V, VIII), adjacent to the GB fossa, likely represented reactive inflammation. There were prominent to enlarged peripancreatic lymph nodes measuring 1.1x1.2 cm.

2.4. Therapeutic Interventions

On admission, the patient was started on intravenous ciprofloxacin 200 mg every 12 hours and metronidazole 500 mg every 8 hours. The patient was referred to an interventional gastroenterologist for an ERCP. ERCP findings revealed dilated biliary ducts with the CBD and common hepatic duct measuring 0.8 cm, while the right and left intrahepatic ducts measured 0.64 cm and 0.48 cm respectively. There were no filling defects noted on cholangiogram (Figure 2). A wire guided sphincterotomy was done with a 0.5 cm cut performed and multiple sweeps with 0.9 cc balloon did not retrieve any stones.

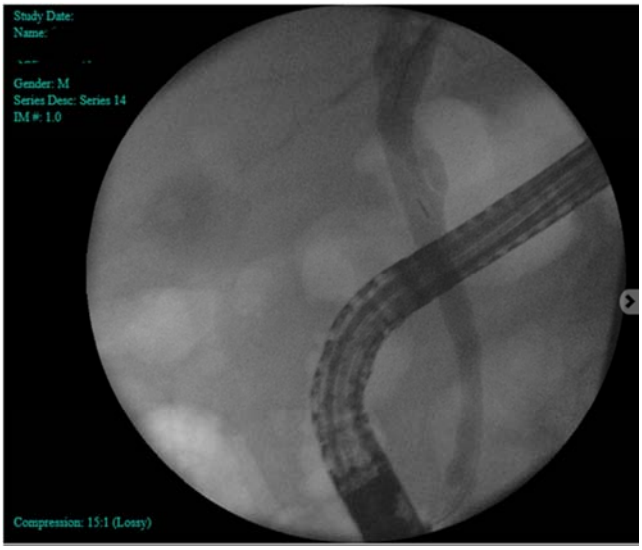

Figure 2. *Cholangiogram revealing no filling defects.*

The patient subsequently underwent extended cholecystectomy. An intra-operative ultrasound was performed revealing a thickened GB wall, hyperechoic with hypoechoic lesions noted adjacent to the GB at the hepatic side (Figure 3).

The intra-operative findings included a thickened GB wall to 0.6 cm, there was a 1x0.5x0.5 cm mass (Figure 4) on the GB wall near the fundus on the hepatic side, and two pigment stones measuring between 0.5 to 0.7 cm.

The gallbladder was noted to be adherent to the liver with areas of beginning necrosis. Two centimeters was transected circumferentially from Segment IV and V of the liver and gallbladder (Figure 5). Finally, en bloc resection of level 6 and 12 lymph nodes completed the procedure.

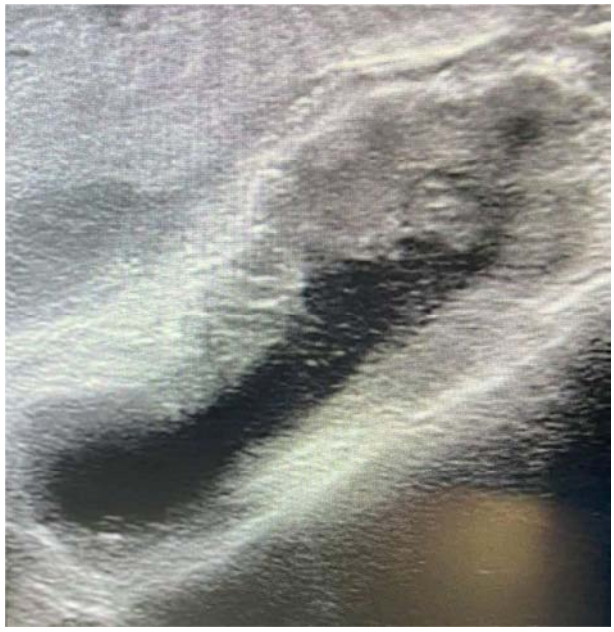

Figure 3. *Intra-operative ultrasound.*

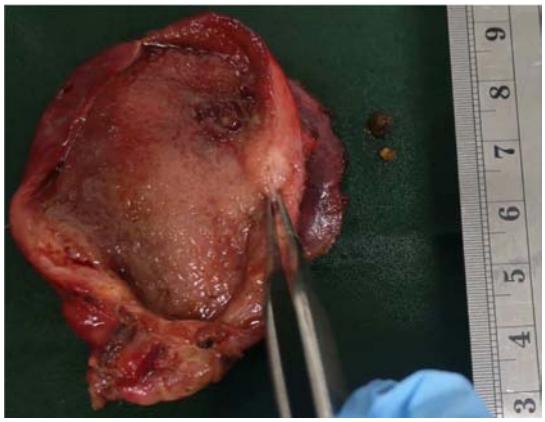

Figure 4. *Cut specimen of the gallbladder revealing the mass (as pointed by the forceps).*

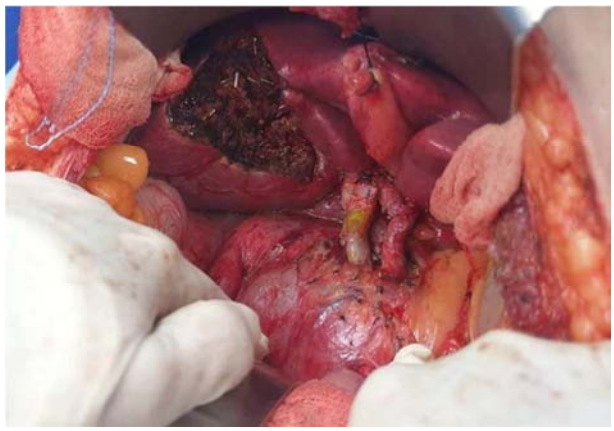

Figure 5. *Post-extended cholecystectomy (CBD preserved).*

The gallbladder was sent for histopathology, revealing chronic xanthogranulomatous cholecystitis (Figure 6), and

was negative for malignancy.

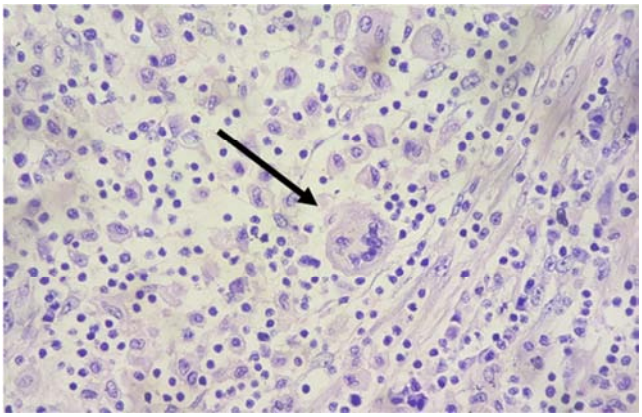

Figure 6. *High power magnification of the section of the gallbladder showing foamy macrophage (as pointed by the arrow).*

2.5. Outcome

The patient had an unremarkable postoperative course, and was able to tolerate soft diet a day after the procedure with good pain control and urine output. The patient was subsequently discharged on the 6th hospital day.

3. Discussion

3.1. Epidemiology and Symptomatology

XGC is a rare form of chronic cholecystitis that is incidentally diagnosed in patients who have undergone cholecystectomy. Its significance stems from the confusion that can arise from diagnosing a benign lesion or masking of gallbladder cancer. Despite its clinical significance, the true incidence of XGC is largely unknown with geographic variations. In a more recent study by Hale et al. [2], suggested a geographical influence with its rates being three to four times greater in India than in other geographical regions. The male to female ratio appears to be equal with a mean age varying from 48.7 to 62.4 years among. The most common symptom was abdominal pain affecting 84.6% of the patients. Other symptoms include nausea (25.6%), vomiting (22.4%), anorexia (18%), and weight loss (8.9%). A positive Murphy's sign (53%) was the most common clinical feature. Other signs include jaundice (20.5%) and a palpable right upper quadrant mass (9.5%). Some patients may rarely present with cholestasis that is associated with stenosis of the CBD due to extension from the XCG [3-5], with one case that led to Mirizzi syndrome [6]. Interestingly, Tuncer et al describe a case that presented with gallstone ileus (through a cholecystoduodenal fistula) and Bouveret's syndrome [7]. Laboratory workups are generally offer little benefit in distinguishing from other gallbladder disorders, with common findings including: leukocytosis and elevated serum bilirubins. Few reports noted cases with elevated CA 19-9 [8, 9].

3.2. Pathophysiology

In XGC, the greyish-yellow nodules or streaks are mainly caused by lipid laiden macrophages. In a study by Singh et al [10], stated that a possible mechanism is through mucosal ulceration or rupture of Rokitansky-Aschoff sinuses due to increased intraluminal pressure secondary to gallbladder or cystic duct obstruction, leading to extravasation of the bile into the gallbladder wall. This causes a granulomatous reaction that leads the formation of intramural nodules. This inflammation may be so extensive that it extends to the adjacent organs, such as the liver, duodenum and transverse colon [11]. Our case showed inflammation reactions that wherein the gallbladder was adherent to the liver, hence further clenching the consideration of gallbladder cancer. Histologically, the early findings of XGC include a large number of histiocytes with clear lipid-containing cytoplasm with acute inflammatory cells. In the later stage, a fibrous reaction occurs that extends to the adjacent structures.

3.3. Radiologic Features

3.3.1. Ultrasonography

One study documented common findings that included the presence of gallstones or sludge and moderate to marked focal or diffuse thickening of the gallbladder wall [9]; while in another study by Parra et al., wall thickening hyperechoic compared to the liver was seen in 100% of patients [12]. The presence of hypoechoic nodules or bands in the thickened wall can occasionally been seen and has been considered to be characteristic of XGC. However, the presence of hypoechoic nodules in XGC ranges varies widely (15-73%) among studies [12, 13].

3.3.2. Computed Tomography

The common CT findings include diffuse or focal wall thickening, intramural hypoattenuating nodules in thickened walls, luminal surface enhancement with continuous mucosal lines or mucosal lines with focal breach. Goshima et al [14] and Zhao et al [15] showed that diffuse gallbladder wall thickening has been observed in 88.9% and 87.8% respectively, while focal thickening is more likely associated with carcinoma. Between 61.1-85.7% of intramural nodules are either XGC or GB abscess [14, 15]. Zhao et al [15] further describes that a continuous mucosal line is more often observed in XGC. Since it is a pathology within the GB wall, then the mucosal surface is intact or only focally denuded.

On the other hand, GB cancer arises from the epithelium, thereby causing mucosal disruption. However, mucosal disruption is not limited to GB cancer, as it is also noted in XGC with diffuse thickening of the GB wall and is more likely to have complications. Luminal surface enhancement was seen in 70-85.7% of cases [15, 16], which represents the preservation of the epithelial layer. There is a wide range of the occurrence of lymphadenopathy as described by Zhao et al [15] and Goshima et al [13], at 10.2 and 90% respectively. All patients with XGC showed enhancement of enlarged lymph nodes compared to on 41% of GB cancer. The infiltration of adjacent structures can be made evident by pericholecystic fat stranding, blurring of the interface between the liver and the gallbladder, and early enhancement of the liver.

3.3.3. Magnetic Resonance Imaging

XGC was demonstrated to have reduced signal intensity on out of phase images when subjected to chemical shift imaging by Zhao [15]. It was postulated that the varied appearance of the intramural nodules is due to its diverse contents (foamy macrophages, lymphocytes, plasma cells, polymorphonuclear cells, fibrosis, giant cells, micro-abscesses and necrosis) [14]. The lower spatial resolution of MRI was assumed the cause as to its lower sensitivity in detecting the intramural nodules as compared to CT. Shuto et al. evaluated the MRI findings of patients with histologically confirmed XGC; revealing that T2 weighted images, the lesions appear with slightly high signal intensity and slight enhancement on early phase and strong enhancement on the late phase [16].

3.4. Management

Skepticism for gall bladder cancer is always present making surgical treatment all the more challenging. An open cholecystectomy approach is recommended because of the dense fibrous adhesions, excessive local inflammation and the risk of concomitant malignancy [17]. Lei Feng et al proceed to describe their experience with 100 cases of XGC with intra-operative findings including cholecystolithiasis, choledocholithiasis, thickened gallbladder wall, lesions infiltrating into the adjacent tissues, disordered Calot's triangle anatomy, enlarged regional lymph nodes, internal gallbladder fistula and hepatic abscesses. Forty-eight of the cases underwent laparoscopic cholecystectomy with whom 8 were converted to open. There is a frequency of associated gallbladder malignancy rate of 2%, though other studies may show a coexistence of up to 12% of cases [12]. A recommendation of frozen section intraoperatively when the pathology is in doubt has been promoted in select cases wherein suspicion of distant lymph node metastasis is considered [18]. However, this could be potentially problematic especially since the examination is subject to sampling error and opening a cancerous lesion may risk disseminating malignant disease [19]. Complete resection with negative borders is the only potentially curative treatment for patients with gallbladder carcinoma, with optimal resection including cholecystectomy with a limited hepatic resection (typically segments IVB and V) and portal lymphadenectomy [18]. Nacif reviewed the reports on radical resection of XCG; the outcomes of 42 patients were reported, which was generally uneventful post procedure, except for one post operative mortality (1%) [20].

4. Conclusion

XGC remains a diagnostic dilemma to this day. There are no pathognomonic features present clinically or radiologically to confirm the condition. Even intra-operative diagnosis is challenging as the inflammation of XGC can be associated with tumor formation and dense adhesions to adjacent organs. Diagnosis still squarely relies on histopathologic findings. Since gallbladder malignancy and XGC are not mutually exclusive, a radial resection is justified when malignancy cannot be completely excluded.

References

[1] Guzmán-Valdivia G. Xanthogranulomatous cholecystitis: 15 years' experience. World J Surg. 2004 Mar; 28 (3): 254-7. doi: 10.1007/s00268-003-7161-y. Epub 2004 Feb 17. PMID: 14961199.

[2] Hale MD, Roberts KJ, Hodson J, Scott N, Sheridan M, Toogood GJ. Xanthogranulomatous cholecystitis: a European and global perspective. HPB (Oxford). 2014 May; 16 (5): 448-58. doi: 10.1111/hpb.12152. Epub 2013 Aug 29. PMID: 23991684; PMCID: PMC4008163.

[3] Krishna RP, Kumar A, Singh RK, Sikora S, Saxena R, Kapoor VK. Xanthogranulomatous inflammatory strictures of extrahepatic biliary tract: presentation and surgical management. J Gastrointest Surg 2008; 12: 836-841.

[4] Kawana T, Suita S, Arima T, Hirayama Y, Ishii K, Minamishima I, et al. Xanthogranulomatous cholecystitis in an infant with obstructive jaundice. Eur J Pediatr 1990; 149: 765-767.

[5] Kawate S, Ohwada S, Ikota H, Hamada K, Kashiwabara K, Morishita Y. Xanthogranulomatous cholangitis causing obstructive jaundice: a case report. World J Gastroenterol 2006; 12: 4428-4430.

[6] Lee KC, Yamazaki O, Horii K, Hamba H, Higaki I, Hirata S, et al. Mirizzi syndrome caused by xanthogranulomatous cholecystitis: report of a case. Surg Today 1997; 27: 757-761.

[7] Martins PN, Sheiner P, Facciuto M. Xanthogranulomatous cholecystitis mimicking gallbladder cancer and causing obstructive cholestasis. Hepatobiliary Pancreat Dis Int. 2012 Oct; 11 (5): 549-52. doi: 10.1016/s1499-3872(12)60223-9. PMID: 23060404.

[8] Solmaz Tuncer A, Gürel S, Coşgun Z, Büber A, Cakmaz R, Hasdemir OA. A Rare Presentation of Xanthogranulomatous Cholecystitis as Bouveret's Syndrome. Case Rep Radiol. 2012; 2012: 402768. doi: 10.1155/2012/402768. Epub 2012 Dec 30. PMID: 23346444; PMCID: PMC3546451.

[9] Adachi Y, Iso Y, Moriyama M, Kasai T, Hashimoto H. Increased serum CA19-9 in patients with xanthogranulomatous cholecystitis. Hepatogastroenterology 1998; 45: 77-80.

[10] Singh, V. P., Rajesh, S., Bihari, C., Desai, S. N., Pargewar, S. S., & Arora, A. (2016). Xanthogranulomatous cholecystitis: What every radiologist should know. *World journal of radiology*, *8* (2), 183–191.

[11] Suzuki H, Wada S, Araki K, Kubo N, Watanabe A, Tsukagoshi M, Kuwano H. Xanthogranulomatous cholecystitis: Difficulty in differentiating from gallbladder cancer. World J Gastroenterol. 2015 Sep 21; 21 (35): 10166-73. doi: 10.3748/wjg.v21.i35.10166. PMID: 26401081; PMCID: PMC4572797.

[12] Parra JA, Acinas O, Bueno J, Güezmes A, Fernández MA, Fariñas MC. Xanthogranulomatous cholecystitis: clinical, sonographic, and CT findings in 26 patients. AJR Am J Roentgenol. 2000 Apr; 174 (4): 979-83. doi: 10.2214/ajr.174.4.1740979. PMID: 10749233.

[13] Kim PN, Ha HK, Kim YH, Lee MG, Kim MH, Auh YH. US findings of xanthogranulomatous cholecystitis. Clin Radiol. 1998 Apr; 53 (4): 290-2. doi: 10.1016/s0009-9260(98)80129-3. PMID: 9585046.

[14] Goshima, Satoshi, et al. "Xanthogranulomatous Cholecystitis: Diagnostic Performance of CT to Differentiate From Gallbladder Cancer." *European Journal of Radiology,* vol. 74, no. 3, 2010, pp. e79-83.

[15] Zhao F, Lu PX, Yan SX, et al. CT and MR features of xanthogranulomatous cholecystitis: an analysis of consecutive 49 cases. European Journal of Radiology. 2013 Sep; 82 (9): 1391-1397. DOI: 10.1016/j.ejrad.2013.04.026. PMID: 23726123.

[16] Shuto R, Kiyosue H, Komatsu E, Matsumoto S, Kawano K, Kondo Y, Yokoyama S, Mori H. CT and MR imaging findings of xanthogranulomatous cholecystitis: correlation with pathologic findings. Eur Radiol 2004; 14: 440-446 [PMID: 12904879].

[17] Feng L, You Z, Gou J, Liao E, Chen L. Xanthogranulomatous cholecystitis: experience in 100 cases. Ann Transl Med. 2020 Sep; 8 (17): 1089. doi: 10.21037/atm-20-5836. PMID: 33145308; PMCID: PMC7575994.

[18] National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Hepatobiliary Cancers. 2021, November 11.

[19] Rahman J, Tahir M, Sonawane S (August 25, 2020) Xanthogranulomatous Cholecystitis: A Diagnostic Challenge for Radiologists, Surgeons, and Pathologists. Cureus 12 (8): e10007. doi: 10.7759/cureus.10007.

[20] Nacif LS, Hessheimer AJ, Rodríguez Gómez S, Montironi C, Fondevila C. Infiltrative xanthogranulomatous cholecystitis mimicking aggressive gallbladder carcinoma: A diagnostic and therapeutic dilemma. World J Gastroenterol. 2017; 23 (48): 8671-8678. doi: 10.3748/wjg.v23.i48.8671.