Case 9513

CT diagnosis of xanthogranulomatous cholecystitis
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Section: Abdominal imaging
Area of Interest: Abdomen
Procedure: Contrast agent-intravenous
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Inflammation Case Type: Clinical Cases
Authors: Ankur Arora1, Hitender Garg2, Amar Mukund1, Archana Rastogi3, Chaggan Bihari3Department of Radiodiagnosis1, Hepatology2, and Pathology3Institute of Liver and Biliary Sciences
Patient: 40 years, female

Clinical History:
A 40-year-old febrile lady presented with worsening right upper abdominal pain of 7-8 days duration. Clinical examination revealed tender palpable lump in the right upper quadrant. Haematological examination revealed leukocytosis (12, 600 cells) with mildly elevated bilirubin (1.6 mg/dl).

Imaging Findings:
Contrast enhanced CT abdomen revealed oedematous thickening of the gall bladder wall with associated pericholecystic fat stranding suggesting inflamed gall bladder wall. Multifocal hypoattenuating non-enhancing intramural areas were present in the thickened walls of the gall bladder. Some were ill-defined nodular in morphology, while lower cuts revealed a subtly intramural hypoattenuating band. The imaging findings led to the suspicion of xanthogranulomatous cholecystitis. MR imaging and MRCP were also performed which revealed multiple intraluminal calculi and sludge within the gall bladder. The wall was thickened and oedematous with a thin sliver of pericholecystic fluid. Axial T1-weighted fat suppressed images revealed subtle hypoattenuating nodules within the gall bladder wall. On MRCP no evidence of choledocholithiasis or biliary dilatation was seen. The patient was taken up for open cholecystectomy; and intra-operatively dense adhesions were encountered in the gall bladder fossa. Post operative histopathology confirmed xanthogranulomatous cholecystitis. The specimen showed no malignant cells.

Discussion:
Xanthogranulomatous cholecystitis (XGC) is an uncommon form of chronic granulomatous cholecystitis characterised by the accumulation of lipid-laden macrophages in the gallbladder wall together with acute and chronic inflammatory cells. Macroscopically, the thickened gall bladder wall exhibits yellowish pseudo-tumoural masses which are rich in foamy histiocytes and xanthoma cells. XGC is relatively more frequently seen in middle aged women and its relation to cholelithiasis is high, from 80-90%. The clinical presentation of XGC is variable, however, patients frequently present with acute cholecystitis or obstructive jaundice. Adhesions to the surrounding structures are frequently seen often making cholecystectomy challenging. Laparoscopic cholecystectomy is often unsuccessful and has a high conversion rate to open cholecystectomy. The exuberant xanthogranulomatous inflammation can contiguously extend on to the adjacent structures, such as duodenum, liver, colon and stomach,
leading to perforation, abscess and fistula formation. XGC with marked gallbladder thickening and dense local
adhesions has been frequently misdiagnosed both intra-operatively as well as pre-operatively (on imaging) as
having carcinoma of the gallbladder and treated with uncalled-for extensive excision. However, recent reports have
suggested certain distinguishing imaging findings suggesting an apt diagnosis of XGC on pre-operative cross
sectional imaging.

CT features of diffusely thickened gallbladder wall exhibiting the enhanced continuous mucosal line (representing
preserved mucosal layer in XGC) or intramural hypoattenuating nodules together with gallstones in a patient with
chronic gallbladder disease, have been considered highly suggestive of XGC [1, 3, 4]. On CT, intramural low-
attenuation band or nodules histopathologically correspond to foamy macrophages and inflammatory cells or
necrosis and/or abscess [1]. A continuous luminal surface enhancement of gallbladder wall represents preservation
of the epithelial layer in XGC as opposed to the disrupted mucosa of GB carcinoma [1]. Chang BJ et al. have
recently evaluated the diagnostic accuracy of MDCT for differentiating XGC from wall thickening types of early-stage
GB cancer which look like XGC [2]. They found that early GB wall enhancement was more common in GB cancer
than XGC; probably suggesting a differential enhancement pattern between inflammatory lesion and cancer. They
proposed that it could possibly relate to angiogenesis which is central to tumour growth. Although inflammation also
increases local blood flow than normal condition, angiogenesis is lacking in inflammation, which could explain why
early perfusion is less than in cancer. This differential enhancement pattern on MDCT, however, needs more studies
for validation [2].

**Differential Diagnosis List:** Xanthogranulomatous cholecystitis, Acute gangrenous cholecystitis, Gall bladder
malignancy

**Final Diagnosis:** Xanthogranulomatous cholecystitis

**References:**

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Description: The GB wall shows oedematous thickening with suggestion of multiple ill defined intramural hypoattenuating nodules. Origin: Ankur Arora, ILBS Hospital, New Delhi, India.
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Description: Gall bladder shows circumferential mural thickening with multiple intramural hypodense foci. Pericholecystic fat planes with adjacent liver are effaced. Origin: Ankur Arora, ILBS Hospital, New Delhi, India.
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Description: A subtle linear hypoattenuating intramural band is seen along the thickened and inflamed lateral GB wall. Origin: Ankur Arora, ILBS Hospital, New Delhi, India.
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Description: Intraluminal GB sludge and cholelithiasis are present within the thickened gall blader. Very subtle hypoattenuating intramural foci are also seen. Origin: Ankur Arora, ILBS Hospital, New Delhi, India.
**Description:** Intraluminal GB sludge and cholelithiasis are present within the thickened gall bladder. Very subtle hypodense intramural foci are also seen. **Origin:** Ankur Arora, ILBS Hospital, New Delhi, India.
Description: T2-weighted fat suppressed images show cholelithiasis and GB sludge along with oedematous GB wall thickening. Origin: Ankur Arora, ILBS Hospital, New Delhi, India.
Description: A thin sliver of pericholecystic fluid/oedema is also seen. Origin: Ankur Arora, ILBS Hospital, New Delhi, India.
**Description:** Histopathological examination confirms dense acute inflammatory exudates with multiple foamy macrophages, areas of haemorrhage and multinucleated histiocytic giant cells. **Origin:** Ankur Arora, ILBS Hospital, New Delhi, India.