Differential Diagnosis between the Gallbladder Cancer and Xanthogranulomatous Cholecystitis by Multiple Percutaneous Biopsies

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Abstract: Xanthogranulomatous cholecystitis (XGC) is a rare form of chronic inflammatory disease that is often mistaken for gallbladder (GB) cancer. Differential diagnosis based on clinical features or imaging scan is virtually impossible and pathological confirmation is crucial for diagnosis. A 72-year-old man was referred to an oncologist for suspicion of unresectable GB cancer with liver metastasis. He was admitted and underwent three percutaneous needle biopsies. However, all specimens showed non-neoplastic hepatic parenchyma with the third biopsy indicating xanthogranulomatous inflammation with abscess formation. The final biopsy changed the diagnosis from GB cancer to XGC. He was prescribed oral antibiotics and discharged after multiple ERBD stenting because of benign biliary stricture. He regularly visited an outpatient clinic and a follow-up CT scan showed a decrease of gallbladder mass. In conclusion, xanthogranulomatous cholecystitis should be considered in the differential diagnoses of GB mass and clinical suspicion is very important for a precise diagnosis.

Key words: Xanthogranulomatous cholecystitis, benign gallbladder mass, gallbladder cancer.

1. Introduction

Xanthogranulomatous cholecystitis (XGC) is an uncommon form of chronic inflammatory GB disease [1]. It presents with nonspecific symptoms often mistaken for gallbladder (GB) cancer [2]. Clinical and radiologic features of XGC have been reported but an exact preoperative diagnosis of XGC is still challenging. Destructive inflammation in the GB and even extending into the surrounding liver and bowel can resemble aggressive malignant disease [3]. In XGC, the gallbladder usually has diffuse and symmetrical wall thickening. Focal or asymmetric wall thickening can also be seen in XGC that is more likely to be associated with GB carcinoma [4]. Diagnosis of XGC can only be made after pathological examination. Microscopically focal or diffuse destructive inflammation with intramural accumulation of lipid laden macrophages, inflammatory cells, and fibroblasts are the hallmarks of the disease [5]. Fine needle aspiration cytology plays an important role in making a preoperative diagnosis. On occasion, confirmatory diagnosis can be made by a pathologic examination of surgical specimen [6]. We present a case of XGC which was confirmed pathologically by percutaneous fine needle biopsy.

2. Case description

A 72-year-old man with a history of diabetes was admitted to our hospital complaining of spiking fever and epigastric discomfort which lasted for one month. He lost 10 pounds of body weight in 2 weeks. A physical examination did not reveal any abnormalities.
His abdomen was soft without tenderness and the Murphy’s sign was negative. Blood tests showed a white cell count of $10.31 \times 10^5/L$, CRP 14.10 mg/dL, total bilirubin 1.0 mg/dL and normal liver function tests. Serum CEA level was 1.7 ng/mL and CA 19-9 level was 33.4 U/mL. After a blood sample was sent for bacterial culture, he was given parenteral piperacillin/tazobactam. Abdominal computed tomography was checked to determine the focus of intra-abdominal infection. The result of the bacterial culture was negative and the CT scan revealed an irregular-shaped GB with asymmetric wall thickening (Figs. 1a, and 1b). Infiltration to the surrounding hepatic parenchyma and main portal vein raised suspicions of direct cancer invasion. A separate low attenuated mass lesion in the liver segment 7 and multiple enlarged para-aortic lymph nodes giving an impression of GB cancer metastasis. Magnetic resonance cholangiopancreatography and positron emission tomography also showed similar findings.

Fig. 1  (a) Irregular-shaped gallbladder (GB) and asymmetrically thickened GB wall with the infiltration to adjacent liver parenchyma, (b) Irregular-shaped GB with asymmetric wall thickening.
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Fig. 2 2(a, 2(b) Histopathology of Xanthogranulomatous cholecystitis with lipid-laden macrophages and inflammatory cells.
consistent with the suspicion of unresectable GB cancer in advanced stages. The patient received antibiotics for 2 weeks, which resolved fever and reduced CRP levels to 1.12 mg/dL. However, a follow-up abdominal CT scan showed constant lesion with the same morphology and size compared to the previous scan. He underwent percutaneous liver biopsy for mass lesion on segment 7. The specimen showed non-neoplastic hepatic parenchyma with minimal portal inflammation. He received a second percutaneous biopsy for the thickened GB wall and the specimen again showed non-neoplastic hepatic parenchyma. Acid-Fast bacilli staining and polymerase chain reaction test for *Mycobacterium tuberculosis* in tissue section were negative. We consulted a surgeon about diagnostic laparoscopy. However, the surgeon recommended another percutaneous needle biopsy rather than surgical biopsy because adhesion to neighboring structures can make surgical dissection very difficult. Furthermore, adjacent major vessels and bile ducts can be damaged during dissection in that condition. Hence, a third percutaneous biopsy of hepatic hilar mass was attempted. The last specimen showed xanthogranulomatous inflammation and abscess formation (Figs. 2a and 2b). After the final biopsy, the patient was discharged and prescribed with oral antibiotics. He received multiple endoscopic insertions of internal biliary stents for drainage of biliary stricture. A follow-up CT scan showed improvement of gallbladder mass, pericholecystic inflammation and biliary stricture.

3. Discussion

XGC is an uncommon disease that mimics GB cancer. Obscure presentations of the disease that is difficult to distinguish from those of GB cancer include not only clinical and radiological characteristics but also intraoperative gross features. Hence, the rate of incorrect diagnosis is as high as 25% [7]. In this case, the radiologic finding was highly suggestive of malignancy but two needle biopsies failed to give adequate diagnosis. After the third percutaneous biopsy, final diagnosis of XGC could be made. XGC can coexist with and may predispose to GB cancer [8]. Complete resection of the GB is essential in order to rule out malignancy and is also the best treatment of choice [9, 10]. However, surgical dissection in XGC was difficult due to destructive inflammation around the vessels and bile ducts in this case. Poor visualization of the Calot’s triangle also makes resection of GB mass very difficult. Intra-operative frozen section of biopsy can help in determining an accurate strategy of operation and can prevent unnecessary extended resections [11]. Whether or not to proceed with surgery should be decided after considering the patient’s clinical settings. In this case, hilar biliary stricture due to xanthogranulomatous cholecystitis and involvement of major vessels were the major reasons of unresectability. He visited a gastroenterology clinic for more than one year because of benign biliary stricture treatment. In the future, careful monitoring is needed to check for recurrent obstructive cholangitis or potential malignancy.

4. Conclusions

Gallbladder masses are commonly encountered in the clinical field. Physicians and radiologists should be familiar with the differential diagnosis in order to avoid misdiagnosis. Clinical suspicion is very important and early multidisciplinary cooperative management is needed in this complex case. Patients who are not feasible for operation should be followed up and be monitored for GB perforation, development of biliary strictures, abscesses, fistulas and cancer occurrence.

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Conflicts of Interest

Jinju Choi and Yong-Tae Kim have no conflicts of interest or financial ties to disclose.

References