

Heterotopic Ossification of the Gallbladder Associated with Chronic Cholecystitis: A Case Report

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Abstract

Heterotopic ossification in the gall bladder is a rare condition, with few reported cases. Its pathogenesis remains unclear, though chronic inflammation may predispose to the condition. An 18 yr old girl underwent laparoscopic cholecystectomy due to persistent upper quadrant pain, nausea and postprandial vomiting. Preoperative ultrasound revealed a polyp with features of cholecystitis. The post operative course was uneventful. Histopathological examination showed fibromuscular hyperplasia, infiltration of chronic inflammatory cells, including foamy histiocytes in the lamina propria. Rokitansky–Aschoff sinuses were present. The polypoid area exhibited denuded epithelium, mature bone formation and marrow elements without evidence of metaplasia, dysplasia or malignancy.

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Introduction

Heterotopic ossification is rarely discovered during histopathological evaluation of cholecystectomy specimens. Persistent irritation and presence of chronic inflammation have been proposed as potential risk factors for metaplastic changes of mesenchymal stromal cells within the gallbladder wall or the deposition of calcium in necrotic or fibrotic tissue, followed by subsequent bone formation.

Case report

A 18 year old female presented to a tertiary care outpatient department with complaints of persistent intermittent right upper quadrant abdominal pain. The pain was not radiating, associated with nausea and postprandial vomiting. She had no history of fever, chills, rigor, altered bowel habits, or urinary

symptoms. Laboratory investigations revealed a normal hemoglobin level, total and differential leukocyte counts, platelet count, liver function tests (including serum bilirubin, alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, and gamma-glutamyl transferase), serum amylase and lipase, and urine analysis. Ultrasound examination revealed a polyp in the gall bladder with features of chronic cholecystitis. The patient underwent laparoscopic cholecystectomy. The excised gall bladder measured 7x3 cm with a wall thickness of 0.3 cm. The mucosa appeared greenish with a 0.4 cm polypoid structure. No gall stone were identified. Histopathological analysis revealed infiltration of chronic inflammatory cells, fibrosis and thickening of muscularis including foamy histiocytes in the lamina propria. Rokitansky –Aschoff sinuses were

present. The polypoid focus showed denuded epithelium, mature bone formation and bone marrow elements. No evidence of malignancy was noted.

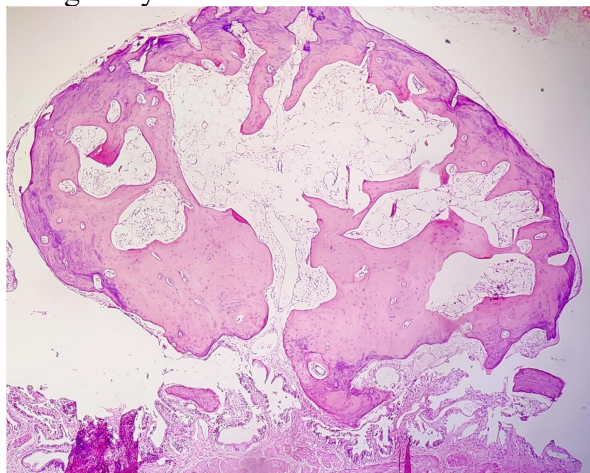


Figure 1. Bone and marrow elements covered by gall bladder mucosal epithelium

Discussion

Heterotopic ossification in the gall bladder is exceedingly rare finding in the gall bladder wall, with fewer cases reported in the literature.¹⁻⁸ Indyk and shipton² described bone metaplasia in the gall bladder with subsequent cases¹⁻⁸ highlighting a relationship with chronic cholecystitis and cholesterol polyps. Of the reported cases, four were associated with cholelithiasis and two involved ossification within cholesterol polyps.^{1,4,6}

Rege and Vargas⁸ reported intramuscular fascitis like proliferation in the gall bladder, while Chen⁷ documented gallbladder osteomas. The other cases are heterotopic ossification without cholelithiasis. Yosepovich et al.⁵ also described heterotopic bones in the gall bladder mucosa. In some cases heterotopic bone with marrow elements was found, while others only showed osteoblastic rimming without marrow components. All the patient were adult, only Rege et al.⁸ reported a unique case in a 07 year old boy with sickle cell disease .

There are also two cases of metastatic gall bladder carcinoma showing stromal osseous metaplasia.^{9,10,11} Micseh et al.¹¹ reported osseous metaplasia in both primary and secondary tumors while Semra dogan's noted cholecystitis associated with osseous metaplasia.⁹ Laurens et al.¹² described ossification in the context of cholelithiasis without features of cholecystitis.

Normal subepithelial connective tissue in the gall bladder does not typically respond to osteogenic stimuli, likely due to the absence of intrinsic osteogenic properties. However, chronic inflammation and stromal fibroblastic activity may facilitate bone formation under specific pathological conditions.⁹

Conclusion

This report highlights a rare case of heterotopic ossification in the gall bladder associated with chronic cholecystitis. While the findings were incidental and of unclear clinical significance, the case underscores the potential role of chronic inflammation and stromal activity in promoting osteogenesis within the gallbladder mucosa. Further studies are required to elucidate the clinical implications and pathogenesis of this rare phenomenon.

Disclosure

The authors declared no competing interest

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