DOI: https://dx.doi.org/10.18203/2349-2902.isj20205409

Cholesterolosis of the gall bladder: a surgical dilemma

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Received: 22 November 2020 Accepted: 30 November 2020

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ABSTRACT

Cholesterolosis of the gall bladder or cholesterol polyps of the gall bladder have always been a contentious issue with respect to the role of prophylactic surgery in view of its asymptomatic state. Symptomatic cholesterol polyps behave similar to gall stones. There is therefore a need for a surgical algorithm to manage these lesions. A case of symptomatic cholesterol polyps of the gall bladder is reported to highlight the clinical presentation, imaging modalities and management strategies. Symptomatic cholesterol polyps of the gall bladder necessitate cholecystectomy. However, surgical intervention for asymptomatic polyps is guided by their size. Increased diameter is highly suspicious of a malignant potential requiring pre-operative staging and radical surgery.

Keywords: Gall bladder, Polyps, Cholesterolosis, Treatment

INTRODUCTION

Gallbladder polyps are commonly diagnosed on ultrasonography during the course of routine health check-ups. This incidence is 0.004 to 13.8% in resected gallbladder specimens and 1.5 to 4.5% of gallbladders studied by ultrasound.^{1,2} There is no association with age, sex, body weight, pregnancies, or any other risk factors.² The biggest dilemma is when these polyps are asymptomatic. However, symptomatic polyps require cholecystectomy. Cholesterolosis or cholesterol polyps are commonly encountered and diagnosed as gallbladder polyps. The existence of this entity establishes the role of the gallbladder in fat metabolism.² A case of symptomatic cholesterol polyps is presented to create awareness of the fact that polyps are symptomatic and can present with symptoms exactly similar to gallstones.

CASE REPORT

42-year-old female patient presented with history of sudden onset of right-side abdominal pain since 2 days. There was no history of vomiting, nausea or any other

symptom. The pain was colicky in nature with no radiation. There was no history of any co-morbid condition or similar symptoms in the past. On physical examination vital parameters were within normal limits. Abdominal examination revealed tenderness in the right hypochondriac region. Rebound tenderness, guarding, and rigidity were absent. Examination of other systems did not reveal any abnormal findings. Haematological investigations included CBC, liver function test, renal function test, blood sugar levels, serum amylase and lipase levels which were all within the normal range. Ultrasonography revealed multiple polyps in the gallbladder with no other positive findings. A CT scan was done which revealed multiple polyps of variable size (Figure 1).

Patient underwent laparoscopic cholecystectomy. The gallbladder was opened and revealed multiple cholesterol polyps (Figure 2).

Histopathology of the legions showed features typical of cholesterolosis. There was no evidence of malignancy (Figure 3). Patient had an uneventful post-operative course and was completely relieved of pain. She was discharged from hospital on the fifth post-operative day.



Figure 1: CT scan showing a polyp in the gall bladder.



Figure 2: Specimen of gall bladder showing typical cholesterol polyps.



Figure 2: Histopathology of the polyp shows sheets of foamy macrophages in the lamina propria (H& E staining, magnification 40X).

DISCUSSION

Virchow was the first to report that the gallbladder had a role to play in regulation of fat metabolism.^{2,3} Cholesterolosis or cholesterol polyps are characterized by accumulation of lipids in the mucosa of the gallbladder

wall. They are usually picked up incidentally or on ultrasonography in majority of the cases. Few may be picked up while evaluating gallbladder specimens removed by cholecystectomy. There is no association with high cholesterol levels, age, sex, increased BMI, multiple pregnancies, or any other similar risk factors.⁴ However, in children, rare associations with leukodystrophy, Peutz-Jeghers syndrome and pancreatico biliary anomalies of fusion are seen.^{4,5} Cholesterol polyps are usually classified under the heading of pseudo tumours which are essentially benign legions of the gallbladder.⁵ Histopathologically they reveal abnormal deposits of triglycerides, cholesterol precursors, and cholesterol esters into the gallbladder mucosa.⁵ Lipid accumulation imparts the vellow colour to these deposits which are visible to the naked eye as seen in the case presented (Figure 2). The appearance of multiple yellow deposits, spread over a hyperaemic mucosa, is typically described as a strawberry gallbladder.5 Fat laden macrophages within the elongated villi described as foamy macrophages are diagnostic of gallbladder polyps. The hyperplastic villi distended with these cells create the vellowish nodular appearance. In majority of cases they are small, measuring less than 0.5 cm in diameter. In a few cases, they assume a polypoidal appearance. The polypoidal form may break off, giving rise to complications similar to gallstones.^{4,5} Biliary colic, acute cholecystitis and obstructive jaundice are manifestations of complications of cholesterol polyps.^{5,6}

Majority of these polyps are asymptomatic. They are usually picked up incidentally on ultrasonography.⁶ In a few cases, they may be symptomatic as in the case presented. The symptoms are exactly similar to those caused by gallstones. The risk of malignancy in cholesterol polyps is negligible.⁶

Diagnosis is usually based on ultrasonography.⁷ Cholesterol polyps are multiple, pedunculated and homogeneous. They are more echogenic as compared to the liver parenchyma. They are usually less than 1 cm in diameter. Computed tomography is another modality for confirming the diagnosis of polyps. It has the added advantage of diagnosing gallbladder cancer as well. Other modalities imaging include of endoscopic ultrasonography, high resolution ultrasonography and contrast enhanced ultrasonography.7 However, a good routine ultrasound evaluation confirmed by CT scan is enough for establishing a diagnosis. For symptomatic patients, cholecystectomy is the recommended treatment. However, asymptomatic patients pose the biggest dilemma to the surgeon. Surgical intervention in asymptomatic patients is guided by the size of the polyps.⁵⁻⁷ Legions greater than 20 mm in diameter are considered to be malignant. A pre-operative staging with CT scan and endoscopic ultrasound should be done before proceeding with radical cholecystectomy.⁷ In lesions between 10-20 mm, there is a possibility of malignancy. A careful laparoscopic cholecystectomy with removal of the entire connective tissue layer of the cystic

plate is advisable.⁸ Polyps between 6 to 9 mm, which typically represent cholesterol polyps require standard laparoscopic cholecystectomy. Legions less than 5 mm in size can be best left alone.⁹ However, once symptomatic, surgical intervention is strongly indicated. There is no role of medical treatment in cholesterol polyps, neither is there any follow up surveillance protocol to monitor the growth and development of the polyps. However, a 6 monthly ultrasound evaluation has been suggested especially in individuals above 50 years of age.^{9,10} If serial imaging reveals increase in size and number of polyps in a patient above 50 years of age, then surgery is indicated.¹⁰

CONCLUSION

Cholesterol polyps or cholesterolosis usually presents as polypoidal legions in the gallbladder. If symptomatic, cholecystectomy is the standard treatment. Asymptomatic polyps are managed based on their size. If there is growing suspicion due to increase in size, it is a safe practice to perform laparoscopic cholecystectomy. There is no fixed surveillance protocol, nor is there any role for medical treatment.

ACKNOWLEDGEMENTS

The authors would like to thank the Dean, D. Y. Patil Medical College, Navi Mumbai, India for permission to publish the case report.

Funding: No funding sources Conflict of interest: None declared Ethical approval: Not required

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Cite this article as: Vagholkar K, Chandrashekhar S, Singh S, Narang N, Bhadavankar A. Cholesterolosis of the gall bladder: a surgical dilemma. Int Surg J 2021;8:375-7.