



STRAWBERRY GB: A TYPE OF CHOLECYSTOSES -SURGICAL DILEMMA (CASE REPORT)

Rajkamal Kanojiya, Rajat Goyal, Himal Rathod*, Ashna Jaggi, Shubham Singh, Rekha Chaudhary, Nalini Joshi and Rishi Deep Jain

Department of General Surgery, Mahatma Gandhi Medical College and Hospital, Jaipur

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ABSTRACT

The term 'cholesterosis of the gall-bladder designates an interesting and fairly common condition in which the mucous membrane is infiltrated with a mixture of cholesterol esters and neutral fat. It is more common in females and relatively rare in young individuals. Cholesterolosis not necessarily will show high levels of serum cholesterol levels or the presence of cholesterol stones. This shows that it is possible for a patient to have cholesterolosis even in absence of risk factors presenting as acute cholecystitis, which validate further need to understand this rare form of an uncommon disease.

We present a case of 24 year old girl presenting with complaint of intermittent right hypochondrium for one week. The patient had complaints that were in favour of gallstones and were underwent sonography for confirmation. In sonography, there were no stones present but the GB wall was thickened, which again arises suspicion for the cause whether it is a neoplastic change or non-neoplastic condition. The patient underwent lap cholecystectomy and intra-operatively the GB was found to be oedematous and red from inside on cut section which was sent for HPE. Her histopathological report revealed cholesterolosis with acalculous cholecystitis.

This indicates that a patient can develop cholesterolosis even in absence of risk factors presenting as acute cholecystitis, which should be further investigated to understand this rare form of an uncommon disease.

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INTRODUCTION

Cholesterolosis is a rare condition characterized by abnormal and excessive deposition of cholesterol esters and triglycerides within the macrophages in gallbladder. It is more common in females around 6th decade and relatively rare in young individuals. Increased uptake of cholesterol from supersaturated bile can cause cholesterolosis. It need not necessarily show high levels of serum cholesterol levels or presence of cholesterol stones. This shows that it is possible for a patient to have such disease even in the absence of risk factors.

Cholecystectomy is a standard surgical procedure which is performed routinely for several diseases of gallbladder including acute or chronic cholecystitis, polypoid lesions and cancer [1-2]. Preoperative imaging is important not only for the diagnose of clinical conditions, but also for surgical planning. Ultrasonography is used primarily to evaluate gallbladder wall thickness and or morphological alterations [3], whereas some advanced diagnostic imaging techniques are used according to the existing clinical conditions [4]. However, routine histopathological examinations might be needed to confirm the diagnosis and to predefine some incidental findings such as cancer in the presence of inadequate or limited imaging techniques [5].

The diagnosis of an incidental or a premalignant lesion should warn clinician for further investigation and surgical intervention. It has been reported that some incidental lesions of the gallbladder may be observed or recognized during histopathological evaluation of the cholecystectomy specimen [6]. Thus, it should be considered that routine histopathological evaluation should be done and its documentation may help the clinician to handle such complicated conditions. The aim of the report is to evaluate the cholesterolosis and its association with histopathological findings.

CASE REPORTS

24 year old female presented in the surgical OPD with complaints of intermittent right side abdominal pain for since one week. The pain was sudden and progressive in nature. It was a colicky type of pain. Pain increases more during having meals and had no diurnal variation. There was no associated history of fever, vomiting, jaundice or any other symptoms. There is no such past history of similar events. Patient does not have any history of co-morbidities. Patient was examined and advised for hospital stay for further evaluation and management. On examination, the general condition of the patient was afebrile, normotensive with tachycardia. The abdominal examination revealed tenderness over the right

*Corresponding author: **Himal Rathod**

hypochondrium. Routine blood investigations revealed a haemoglobin of 12.0g/dl with WBC count of 6, with total bilirubin 1.2,direct bilirubin 0.8 and indirect bilirubin 0.4 while the remaining investigations including serum electrolytes, lipase ,amylase, clotting profile, and arterial blood gas (ABG) were within normal limits. Chest radiograph showed no significant findings. A whole abdomen sonography was done which revealed gall bladder having no calculi with wall thickness of 4.5mm, CBD 3.4mm and PV 9mm, rest liver, spleen, pancreas, kidneys, urinary bladder visualized normal.



Fig usg showing thickened gall bladder

Management

Patient underwent elective Laparoscopic cholecystectomy. Patient had an uneventful post-operative period and was discharged after 5 days.

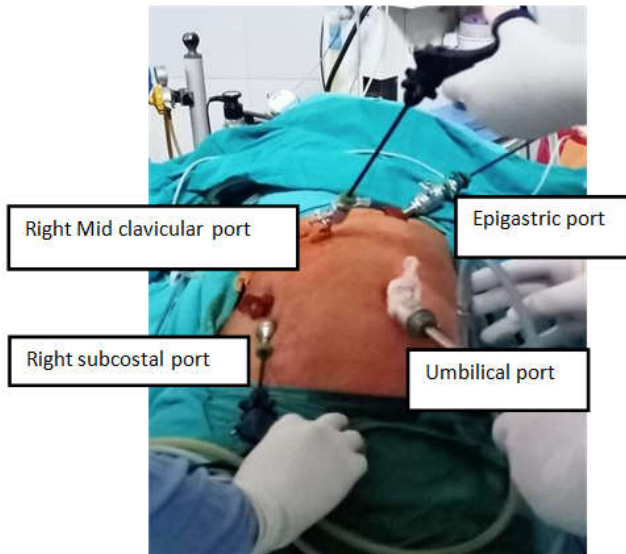


Fig Patient Prep for Laparoscopic Cholecystectomy with Ports Insertion Site

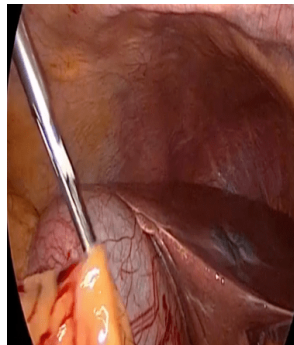


Fig Inspection of Abdomen

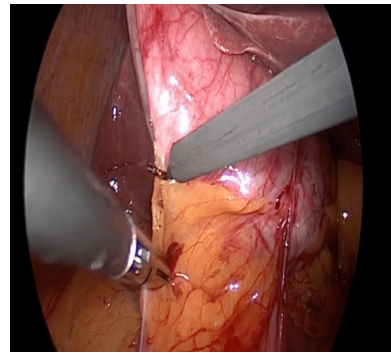


Fig Omental Attachments to GB Were Removed

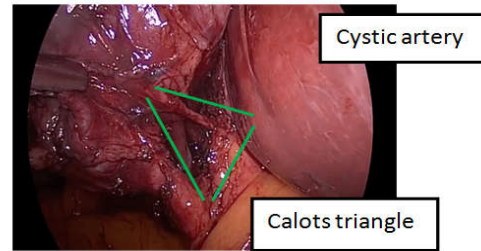


Fig Calots Triangle Exposed

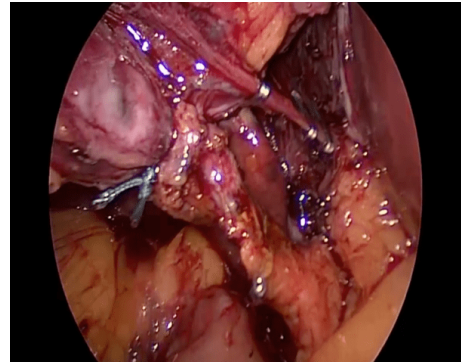


Fig Calots Traingle Dissected and Vessels Ligated And Clipped

Intra-op:-The incision was given over gall bladder and the cut section was looked for any presence of stones, there was no stones and the wall appears congested, inflamed, oedematous and red with yellowish deposits adherent to mucosa .This was then sent for histopathology.



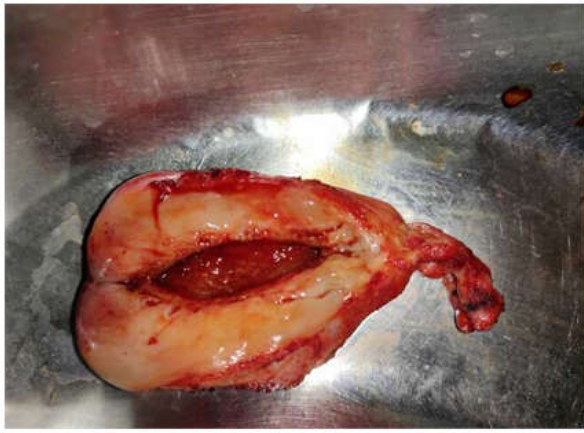


Fig Showing Intra-Op Gall Bladder

Histopathology Report

1. Columnar epithelium with basal placed nucleus showing mucosal prolapse into muscularis. (FIG: A)
2. Foamy macrophages in lamina propria and epithelium. (FIG: B)
3. There was no evidence of malignancy

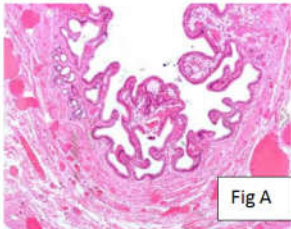


Fig A

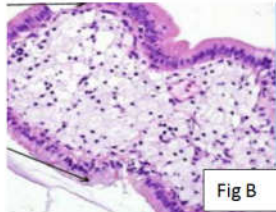


Fig B

DISCUSSION

Virchow in 1857 described unusual stippled appearance of the mucosa of gallbladders removed during autopsy. He considered the yellow flecks and strands as fatty infiltration and suggested that the material is a neutral fat which is excreted by the liver and reabsorbed from the bile by the help of epithelial cells which are present in gall bladder mucosa. MacCarty in 1910 coined the term "strawberry gallbladder," which received global acceptance.

The term "cholesterosis of the gallbladder," proposed by Mentzer, and was more or less describes the essential pathologic and clinical features of the condition.

The pathological features of cholesterosis are not disputed. It is an acalculous biliary disease of the gall bladder characterised by the accumulation of lipids in the mucosa of the gall bladder wall (7). The exclusive golden yellow lipid deposits in the mucosa have led to call this "strawberry gall bladder"(8). The aetiology for cholesterosis is not clear, but several theories have been proposed:

1. Synthesis of surplus lipids by mucous membrane (9);
2. Failure of sub-mucosal macrophages to metabolise or excrete cholesterol absorbed from the bile(10).

The human gall bladder can absorb little quantity of cholesterol from bile, and patients with cholesterosis have a high (supersaturated) biliary cholesterol content. Super saturated bile is present in both cholesterol cholelithiasis and cholesterosis, and these two conditions often coexist. The

mucosal changes therefore arise simply because of increased cholesterol uptake from bile containing extra cholesterol.

Its prevalence varies from 9 to 26 percent. It is an acquired histological abnormality of the gallbladder epithelium, consisting of an increased accumulation of cholesterol esters within the epithelial macrophages. This lesion of the gallbladder has remained an enigma for over a century and it is still controversial whether cholesterosis is an important cause of biliary symptoms or just an incidental histological finding. The pathogenic mechanism that activate the development of cholesterosis is the stimulation of cholesterol acyltransferase by the biliary cholesterol. This leads to increased deposition of esterified cholesterol in the gallbladder mucosa. Recent data has predicted that venous and lymphatic stasis may be the etiologic factor causing disturbance in secretory and absorptive functions of the gallbladder epithelium. Lamont and Carey have suggested that the absorption of cholesterol esters and triglyceride from the gallbladder lumen leads to muscle dysfunction: G proteins are not activated when cholecystokinin binds to its receptors on smooth muscle cells of a lithogenic gallbladder. Microscopic feature is the presence of fat laden macrophages within elongated villi. Most of the lipids are in liquid crystals form which are present in the cytoplasm of the macrophages, which leads to birefringence under polarized light and gives a characteristic foamy appearance under microscopy.

The hyperplastic villus is filled and distended with these cells, creating the tiny yellow nodules under the epithelium. In about two-thirds of cases, these nodules are less than 1 mm in diameter, which provides the mucosa the coarse and granular appearance that is characteristic of the diffuse or planar type of cholesterosis. The nodules in the remaining one-third of cases the nodules are larger and polypoid in appearance (polypoid form)

In the polypoid form the deposits give rise to single or multiple cholesterol polyps that are attached to the underlying mucosa with a fragile epithelial pedicle, the core of which is composed of lipid filled macrophages.

There is no association with high cholesterol levels, age, sex, increased BMI, multiple pregnancies, or any other similar risk factors.(11) However, in children, rare associations with leukodystrophy, Peutz-Jeghers syndrome and pancreatico biliary anomalies of fusion are seen. Cholesterol polyps are usually classified under the heading of pseudo tumours which are essentially benign legions of the gallbladder.(12)

Cholecystoses are chronic inflammatory conditions of gallbladder with cholesterol deposits.. Cholecystoses gallbladder is more prone for infection. It may precipitate stone formation. It is a premalignant condition.

Types

1. Aggregations of cholesterol crystals in the mucosa or submucosa— *cholesterosis (Strawberry gallbladder)*. Lipoid contents are present in large foamy cells which has phagocytosed cholesterol. Here cystic duct is normal. Disease occurs only in gallbladder. It is a premalignant condition.
2. Cholesterol laden polypoid projections in the mucosa— *cholesterol polyposis (Gallbladder polyp)*.

3. Granulomatous thickening and hyperplasia of the gallbladder— *cholecystitis glandularis proliferans*
4. Diverticula formation in the wall of the gallbladder— *diverticulosis of gallbladder*.
5. Gallbladder wall fistula

Mostly the patient is asymptomatic but can present with right hypochondriac pain, or superadded with chronic cholecystitis, pain occurring due to hypercontraction of gallbladder or free floating debris causing intermittent biliary colic. However may have similar symptoms to those of gallstones.

There are no known complication but some believe they have increased risk of gall stones. The most common condition associated with it is adenomyomatosis as they look similar in imagings. In the uncommon case of cholesterosis in children, it's usually associated with other conditions such as:

1. Peutz-Jeghers syndrome. This condition causes noncancerous polyps to form in the gastrointestinal tract.
2. Metachromatic leukodystrophy. This state causes an accumulation of fats in cells.
3. Pancreatobiliary malunion. This state is a cause of bile duct obstruction.

Ultrasound may show gallbladder polyps with or without gallstones and biliary sludge. Laparoscopic cholecystectomy is safe with additional benefits such as early discharge, return to normal activity and good cosmetic results.

CONCLUSION

Cholesterosis though cited in many archives remains a benign ambiguous entity due to its inconclusive epidemiology, controversial association with variety of diseases, viz. hypercholesterolaemia, alcohol and smoking, cholelithiasis, cholecystitis and relatively asymptomatic course, but safe and potentially treatable with cholecystectomy. In conclusion, the incidence of cholesterosis of the surgically removed gallbladders is significant. Hypercholesterolemia and cholesterosis invariably coexist in the same individual and LC is the recommended surgical therapy for cholesterosis of the gallbladder.

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