

Original research article

A Study on Histopathological Changes in Spectrum of Gallbladder Diseases

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Abstract

Introduction: Gallstones are the commonest biliary pathology, the incidence ranging from 10% to 20% of the world population. Over 95% of biliary tract disease is attributable to cholelithiasis. Gallbladder stones are known to produce histopathological changes in the gallbladder.

Aim: To study spectrum of gallbladder diseases in cholecystectomy specimens and the incidence of various neoplastic and non neoplastic lesions occurring in gallbladder

Materials and Methods: All clinical details and data from case sheet and patient history are collected and analysed in Department of Pathology, Prasad Institute of Medical Sciences, Lucknow From(June 21 to June 22) grossly examined and routinely processed and stained with H&E stain. Three sections each from neck, body and fundus taken. Tissues were processed in automated tissue processor and paraffin blocks made. Statistical analysis of the data was done.

Results: Total number of specimens received were 72 and among the cases the number of females were 66 and the number of males were 6. Out of 72 cases of cholecystectomy the number of cases of calculous cholecystitis was 62 (86%) and the number of cases of acalculous cholecystitis was 10 (14%) Majority of cases of cholecystectomy were found to be with gallstones (Calculous cholecystitis) and only a few cases were found to be without gallstones (Acalculous cholecystitis).

Conclusions: Almost all of the gallbladder lesions are inflammatory in origin, of which the most common disease being chronic cholecystitis in female of 30–40 years presenting with abdominal pain. Thirdly, pigmented gall stones were found to be the most common etiology of chronic cholecystitis and malignancy of the gallbladder in this population is a rare occurrence.

KEYWORDS: Cholelithiasis, gallbladder mucosa, histopathology

Introduction

Worldwide gallstone disease is a common health problem [1]. It includes both non neoplastic and neoplastic lesions [2]. Cholelithiasis leads to a variety of histopathological changes in gallbladder mucosa such as acute and chronic inflammation, cholesterosis, hyperplasia and carcinoma [3]. Cholelithiasis is commonly associated with carcinoma gallbladder in up to 40%-100% and is the most frequently associated factor independent of age or sex [1]. Most

of gallstones (>80%) are “silent” but gallstones can also cause numerous complications associated with cholecystitis and can lead to significant morbidity and mortality [4]. Gallbladder carcinoma is a rare condition. It is commonly diagnosed as an incidental histological finding following cholecystectomy for gallstone disease [5]. It is pertinent to analyze the histopathological changes associated with the gallbladder disorders in order to ascertain the incidence, prevalence, distribution as well as the histomorphological features. This study is directed with these objectives.

Materials and Methods:

All clinical details and data from case sheet and patient history are collected and analysed in Department of Pathology, Prasad Institute of Medical Sciences, Lucknow From(June 21 to June 22) grossly examined and routinely processed and stained with H&E stain. Three sections each from neck, body and fundus taken. Tissues were processed in automated tissue processor and paraffin blocks made. Statistical analysis of the data was done. Clinical details and histopathological data were retrieved from the hospital records All specimens were fixed in 10% formalin. Three sections each from neck, body and fundus taken. Tissues were processed in automated tissue processor and paraffin blocks made, the sections cut into 4mm thickness and stained in Hematoxylin and Eosin stain for studying the general histology. Different histological findings were noted in various layers of cholelithiasis specimens and cholecystitis gallbladder which are compared with each other.

Results

Total number of gallbladder specimens received during the study period were 72. Out of 66 number of specimens received the number of female patients were 33 and the number of male patients were -6 (Table 1).

Table 1: Sex distribution in cholecystectomy patients.

Sex	Number of specimens
Females	66
Males	6

The female patients were found to be predominantly affected by cholecystitis and cholelithiasis. In this study females patients were found in the Age group between 20-74years and the males patients were found in the age group between 37-44years as shown in (Table 2).

Table 2: Age distribution in both male and female cases.

Age group	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Females	2	14	20	12	8	8	2
Males	0	0	2	4	0	0	0

Table 3: Various types of cholecystitis and number of cases.

Types of cholecystitis	Number of cases
Calculous	62
Acalculous	10

Out of 72 cases of cholecystectomy the number of cases of calculous cholecystitis was 62 (86%) and the number of cases of acalculous cholecystitis was 10 (14%) as shown in (Table 3). Majority of cases of cholecystectomy were found to be with gallstones (Calculous cholecystitis) and only a few cases were found to be without gallstones. (Acalculous cholecystitis). And among the calculous cholecystitis cases, the type of stones found were as follows.

Types of stones that were found in 72 calculous cholecystitis cases

The Number of cases with pigment stones was 62 and the Number of cases with mixed stones was 6 whereas The Number of cases with cholesterol stones was 4 as shown in (Table 4).

Table 4: Various types of stones and number of cases.

Type of stones	Number of cases
Pigment	62
Mixed	6
Cholesterol	4

Table 5: Various types of surgical procedure and number of cases.

Surgical procedure	Number of cases
Laproscopy	60
Open surgical procedure	12

In 72 cholecystectomy cases the following histopathology types were found in the study group

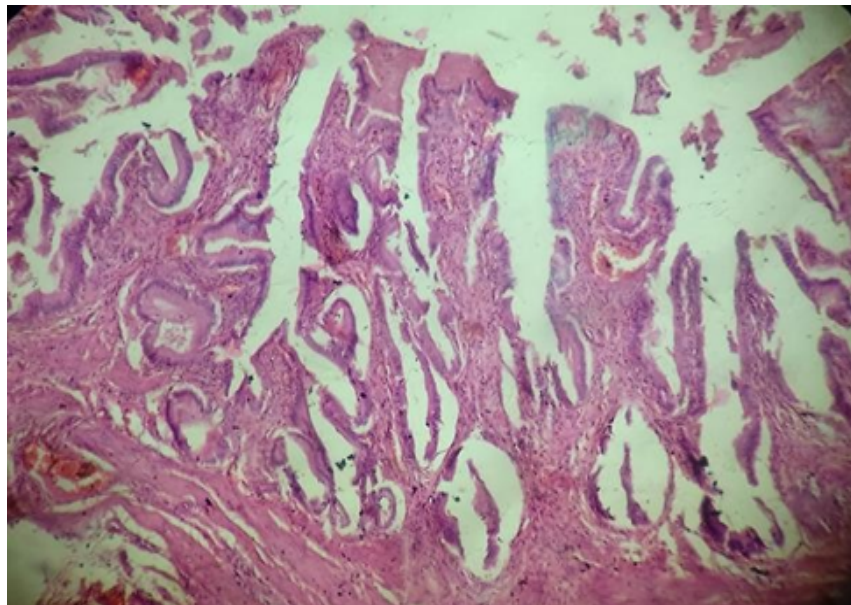


Fig:1 Chronic cholecystitis.

The Figure 1 shows gallbladder wall with focal ulceration and collection of chronic inflammatory cells consisting of lymphocytes and plasma cells beneath the lining epithelium

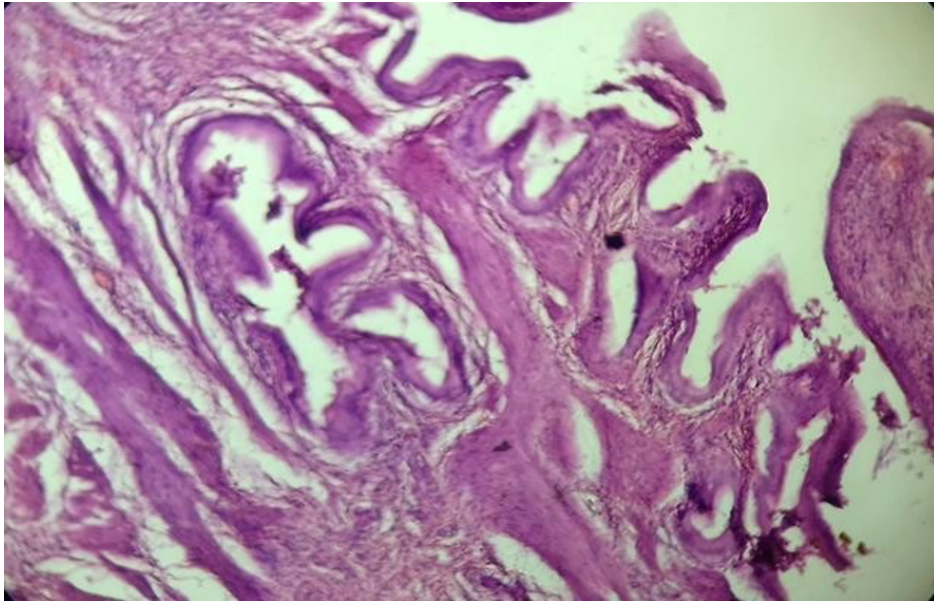


Figure 2: Chronic cholecystitis with Rokitansky Aschoff sinuses.

The Figure 2 shows presence of glands within muscle layer called Rokitansky Aschoff sinuses, seen often in chronic cholecystitis which can be mistaken for malignant infiltration. The subepithelium shows infiltration of lymphocytes and plasma cells

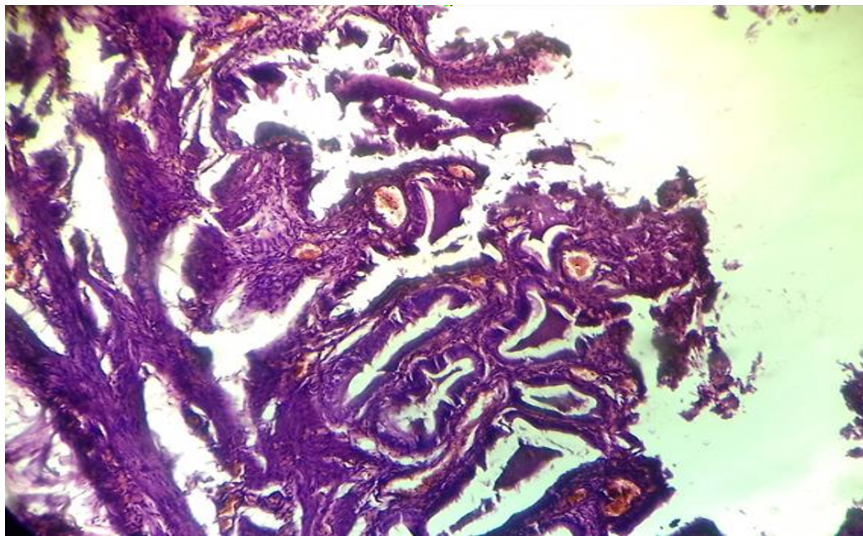


Figure 3: Chronic cholecystitis-follicular type and with hyperplasia of glands-low power. The Figure 3 shows collection of lymphocytes with focal follicle formation in the subepithelium as seen in follicular type of chronic cholecystitis with increase in number of glands. The glandular hyperplasia is commonly seen in chronic cholecystitis

Discussion

More than 95% of biliary tract disease is attributable to cholelithiasis. As chronic cholecystitis is associated with cholelithiasis in more than 90% of cases, the at-risk population is the same as that for gallstones. Supersaturation of bile predisposes to both chronic inflammation and in most instances stone formation.⁶ Microorganisms usually *E. coli* and *enterococci* can be cultured from bile in about one third of cases. Biliary symptoms often emerge following the long-term co-existence of gallstones and low-grade inflammation. Chronic cholecystitis is rarely seen in the absence of lithiasis, although pure stones of the cholesterol and calcium bilirubinate types may be present without inflammation. Thickening of the wall is always

present sometimes to a striking degree. Occasionally this is associated with diffuse calcification a condition known as porcelain gallbladder. It was concluded that prophylactic removal of gallbladder containing stones is indicated in all patients who are good surgical risks. Similar conclusions were drawn in National cooperative gallstone study which involved 305 patients. Inflammatory polyps are always associated with chronic cholecystitis, adenomyomatous hyperplasia and adenomyomatous hyperplasia are reactive mucosal changes secondary to inflammation and or lithiasis. The lining cells and neck mucous glands mainly contain sulfated acid mucin and very small amount of non-sulfated acid mucin.⁶ Tyagi SP et al, studied the morphologic changes of gallbladder in 415 cholecystectomy specimens. Females were more affected with male to female ratio of 1:6.5. The mean age was 43.6 yrs. Most of the cases were seen in 4th and 5th decade. Associated cholelithiasis were present in 85.3% of cases.⁷ Chronic cholecystitis was main histological diagnosis. Other lesions were adenomyomatosis, adenomatous hyperplasia, granulomatous cholecystitis, cholesterosis, acute cholecystitis, acute on chronic infection, subacute cholecystitis, carcinoma gallbladder. Liew LP et al, in Taiwan declared obesity as an important risk factor for gallbladder disease.⁸ Two prospective studies by Csendes et al suggested that chronic inflammatory changes could occur prior to appearance of stones.⁹ Katsika D et al, study shows that overweight and obesity are associated with significantly higher risk of symptomatic gall stone disease.¹⁰ Kriska et al, study showed that physical activity is significantly and inversely related to development of gallbladder disease.¹¹ Pannwitz H et al, concluded that gallstones are infrequently present in nulliparous women. The prevalence of gallstones increased with number of births and with age.¹² Study done by Khan MK et al in Bangladesh showed that significantly higher incidence of gallstones found in younger women taking oral contraceptives. The reverse findings were obtained in older age group patients.¹² In the study of Kafle S et al gastric metaplasia was present in 33% and intestinal metaplasia in 8%. Maximum positivity among the three mucins was of neutral mucin followed by sulphated and sialomucin. The sulphated mucin positivity with both gastric and intestinal metaplasia yielded significant p value. Neutral mucin yielded significant p value with gastric metaplasia.¹² Franco V et al, study showed that Xanthogranulomatous cholecystitis is found with female preponderance in sixth and seventh decade.¹³ Gupta SC et al, study showed that prevalence of gallstones in gallbladders with metaplastic, dysplastic and neoplastic mucosal changes are significantly higher. Increase in sialomucin with decrease in sulphated mucin was observed from metaplasia to malignancy. Neutral mucin was increased in metaplastic cells but was significantly reduced in neoplastic cells.¹⁴ Ganesh IM et al, study shows that sulphated mucins have a great role in gallstone formation than neutral mucins. Sialomucins and sulfomucins play a greater role in cancer progression and metastasis.¹⁵ In this study the increase risk factors for developing chronic cholecystitis were seen in female gender (91%). Chronic cholecystitis with cholelithiasis constituted. In the present study, there was also a female preponderance with male to female ratio of 1:11. Most of the cases were in their fourth decade of life. The histopathological findings seen were chronic cholecystitis with stones, chronic cholecystitis without stones, acute on chronic cholecystitis, xanthogranulomatous cholecystitis

Conclusion

Almost all of the gallbladder lesions are inflammatory in origin, of which the most common disease being chronic cholecystitis. Secondly, from this study it may also be concluded that chronic cholecystitis is the most probable diagnosis in a female of 30-40 years presenting with abdominal pain. Thirdly pigmented gall stones were found to be the most common etiology of chronic cholecystitis. Lastly, malignancy of the gallbladder in this population is a rare occurrence. In addition to the direct conclusions from the study, it must be noted that prompt detailed histopathological analysis of the cholecystectomy specimens will help to confirm the

benign nature of the disease or to detect any precursors of malignancy. This will be decisive in the management and prognosis of the patient. Therefore, care must be taken to ensure adequate and immediate fixation of specimen by the surgeon accompanied by meticulous macroscopic and microscopic evaluation by the pathologist

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