

Prevalence of Histopathological Changes in Cholelithiasis cases

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ABSTRACT

Introduction: The gall bladder is a small hollow organ, situated in the right upper quadrant of the abdomen. It plays a significant role of biliary system in body. The gall bladder stores the bile produced by the liver. It is responsible for almost 95% of cases of biliary tract disease. The prevalence varies according to ethnicity, age and gender. lifestyle of people changes including their dietary intake of unhealthy foods high in fat, lack of exercise, obesity and various factors.

Aim & Objective: To Review the Prevalence of histopathological changes in cholelithiasis cases and compare with different age groups and gender.

Method and Material: The cross-sectional study was done in department of Pathology, Anatomy and Surgery. A total of 140 specimens were taken from gallbladders after cholecystectomy. Inclusion Criteria for specimen were cholecystectomy specimens with cholecystitis and cholelithiasis cases between age groups between 18-60 years.

Results: All mucosal changes were significantly more common in females than in males. Chronic cholecystitis was the most common disease, particularly in women. Rokitansky Aschoff Sinuses were more in females than males and muscular hypertrophy were relatively common in both females and male.

Conclusion: Cholecystectomy is a common surgical procedure that is crucial for gallbladder disease in the worldwide. All histopathological changes were significantly more common in females than in males.

Keywords: Gall Bladder, Cholecystectomy, Gallstones

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1. INTRODUCTION

The gall bladder is a small hollow organ, situated in the right upper quadrant of the abdomen. It plays a significant role of biliary system in body. The gall bladder stores the bile produced by the liver, which is later released in the intestine. ^[1] The gallbladder is an important surgical organ. It can be caused by a number of clinical conditions. It contains a broad range of diseases including gallstones and their implications, as well as abnormalities in development. Gallstones are the most prominent biliary pathology and a major cause of diseases and mortality. Cholelithiasis is a common condition that affects 10% to 20% of adults. Cholelithiasis is responsible for almost 95% of cases of biliary tract disease. The prevalence varies according to ethnicity, age, and gender. lifestyle of people changes including their dietary intake of unhealthy foods high in fat, lack of exercise, obesity, sedentary habits and various factors. ^[2] One of the most common gastrointestinal conditions is gallstone disease, which is mostly brought due to hepato-biliary system metabolic issues. ^[3] Over 95% of biliary tract diseases are caused by gallstone disease. It has been shown that gallbladder stones may change the gallbladder's morphology. ^[4] Gall stone disease also causes the development of disease in the cells or tissues of the gallbladder. In addition to causing digestive symptoms and pain in the right upper quadrant. ^[5]

Gallbladder mucin is one of the components that cause the development of gallstones.^[6] Gallstones are a major reason for gallbladder cancer. Many reasons cause the development of Gall Bladder Carcinoma, included obesity, reproductive factors, genetic factors, lifestyle risk factors (such as alcohol and cigarette smoking), chronic gallbladder infections, environmental exposure to certain chemicals and many more. Large gallstones and a history of chronic Gall stone disease have been found to be major risk factors for the development of Gall Bladder Carcinoma, which has been estimated to have increased four to seven times.^[7]

There are mostly 3 types of stones: mixed stones and cholesterol stones and pigment stones. Mixed stones and cholesterol stones which are made up of different mixtures of cholesterol, bile pigments, and bile salts; pigment stones, which are made up of bile pigments. Gallstones increase in size and quantity, which causes continuous inflammation and various types of pathological changes in the wall of Gall bladder.^[8] Type 2 diabetes, obesity, insulin resistance, Dyslipidemia (hypertriglyceridemia), metabolic syndrome, and metabolic abnormalities frequently play a role in the pathophysiology of cholesterol gallstones.^[9] Multiple studies show that histological examination is due to the high incidence of incidental cancer of all cholecystectomy specimens. The study of histopathological variations is crucial for finding out the lesions' incidence, prevalence, and distribution of cholelithiasis in gall bladder.

Aim of our study is the Review the Prevalence of histopathological changes in cholelithiasis cases and compare with different age groups and gender.

2. METHOD AND MATERIALS

The cross-sectional study was done in department of Pathology, Anatomy and Surgery. A total of 140 specimens were taken from gallbladders after cholecystectomy. Chronic cholecystitis was found through histopathology.

Inclusion Criteria for specimen were cholecystectomy specimens with cholecystitis and cholelithiasis, Specimens show chronic cholecystitis by histopathology, specimens from both male and female patients in the 18–60 age group.

Excluded specimens were those without any clinical details and calculous cholecystitis specimens Physical characteristics of stones namely cholesterol, pigment or mixed, based on morphology were noted. Yellow and whitish stones were identified as cholesterol stone. Black and dark brown stones were identified as pigment stones. Brownish yellow or green stones were identified as mixed stones. 10% formalin was used to collect the gall bladder samples. For the histological study, tissues were prepared using formalin fixation, routine processing, and paraffin embedding. Paraffin sections required more processing before their staining with haematoxylin and eosin [H&E] for histological study.

3. RESULTS

Table no-1 Showing Gender wise distribution of cholelithiasis cases

Gender	No of cases	Percentage (%)	Mean±SD
Female	114	81.40%	37±12
Male	26	18.57%	40±11
Total	140	100	38±12

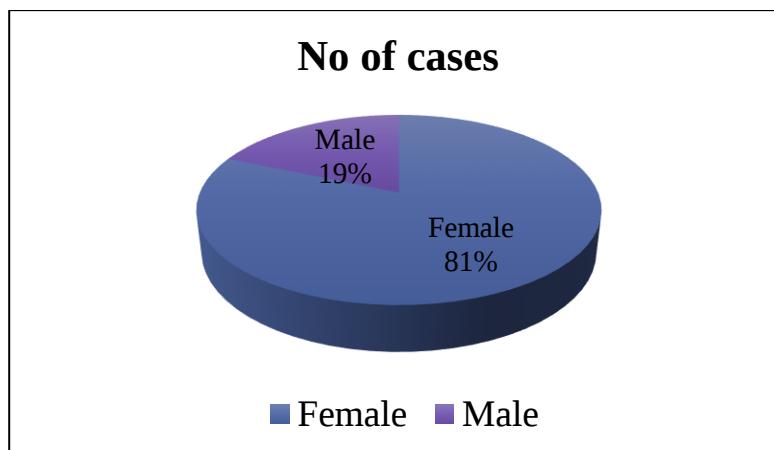


Figure no-1 Gender wise distribution

Above Table and figure show 114 female cases (81.4%) and 26 male cases (18.6%) in total 140 cases. The mean value for females is 37 with a standard deviation of 12, while the mean value for males is 40 with a standard deviation of 11.

Table no-2 showing Age group wise distribution of cholelithiasis cases.

Age Groups (In years)	Female	Percentage (%)	Male	Percentage (%)	Total
18-30	43	31	5	4	48
30-40	32	23	10	7	42
40-50	18	13	5	4	23
50-60	23	16	4	3	27
Total	116	83	24	17	140

The majority individuals in this distribution are between the age of 18 and 30 and across all age groups, there are statistically more women than men.

There are 48 individuals between the age of 18 and 30 (43 women and 5 men), 42 individuals between the age of 31 and 40 (32 women and 10 men), 23 individuals between the age of 41 and 50 (18 women and 5 men), 27 individuals between the age of 50 and 60 (23 women and 4 men).

Table no-3 Frequency of histopathological changes in cholelithiasis cases.

Parameters (Mucosal changes)	Female	Percentage (%)	Male	Percentage (%)	Total
Chronic Cholecystitis	104	74	23	16	127
Rokitansky Aschoff Sinuses	61	44	16	11	77
Muscular Hypertrophy	28	34	11	8	59
Mucosal Gland metaplasia	16	11	0	0	16
Acute Cholecystitis	9	6	0	0	9
Intestinal Metaplasia	2	1	0	0	2

All mucosal changes were significantly more common in females than in males. Chronic cholecystitis was the most common disease, particularly in women. Rokitansky Aschoff Sinuses were more in females than males and muscular hypertrophy were relatively common in both females and male. Mucosal Gland Metaplasia, Acute Cholecystitis and Intestinal Metaplasia were not present in males.

4. DISCUSSION

Bajaj U et al.^[4] found that, 39 (14.18%) had mixed gallstones, 107 (38.91%) cholesterol, and 129 (46.91%) had pigmented. The prevalence of chronic calculous cholecystitis was 23.44 percent, or 22 individuals. 113 out of the 192 cases, or 13%, were female. There were 230 cases of acute cholecystitis (28.08%). There were 71 patients (8.67%) with acute calculous cholecystitis. In our study, women were greater probability than males to have gallstones. Thirty-five (17%) out of the 140 gallstones were mixed, 67 (33%) were pigmented, and 98 (49%) were cholesterol.

Siddiqui FG, et al.^[10] showed that there were 193 (87.7%) female patients and 27 (12.7%) male patients. The ages of patients ranged from 19 to 80 years old. Chronic cholecystitis recorded 92.3% of the most frequent histopathological findings. In our study, 114(81%) were females whereas 26 (18.57%) were males. Our age of the patients were between 18 to 60 years old. I found that 127(90%) of patients had chronic cholecystitis.

Sajjad M, et al.^[11] reported by a study on microscopic analysis of gallbladder specimens, acute cholecystitis was found in 48(14.7%) of cases and chronic cholecystitis in 276(84.7%) of cases. In our study, the most frequent occurrence in 127(90%) cases were chronic cholecystitis, which was followed by acute cholecystitis in 9(6.4%) cases.

Sachidananda et al.^[12] In their study, found that women had a greater frequency of gallstones than men. In our study, women were more affected as compared to men. In a study conducted by Almas et al.^[13] Das et al.^[14], Degloorkar et al.^[15], Jha et al.^[16] also observed that women were more vulnerable to gallstone formation (74.7%, 83.4%, 68.63%, and 75.35% respectively).

In the present study, 127 (90%) cases had chronic cholecystitis and 9 (6.4%) had acute cholecystitis. in the study conducted

by Khan DM et al.^[17] and Kumari et al.^[18] was noted in 1.52% of patients and 2.7% of cases respectively.

In the present study, out of the 140 cholecystectomy specimens reviewed, it was found that women had a greater frequency of gall bladder lesions 114 (81.40%), than men 26(18.57%). These results were similar to those of studies conducted by Savanur K et al.^[19] and Dabral, M. et al.^[20]

The most prevalent pathology found in our study was chronic calculous cholecystitis. This study was comparable to done by Khan DM et al.^[17] and Mushtaq et al.^[21]

Mahato PK et al.^[22] found that chronic cholecystitis was more common in women with a 91% prevalence. Both chronic cholecystitis and cholelithiasis were noted, which is similar to our study.

5. CONCLUSION

Our study shows wide range of histopathological spectrum lesion on Calculus Cholecystitis. Therefore, it is very much imperative to conduct routine histopathological examination to see its prevalence to exclude malignant conditions. The histopathological changes were significantly more common in females than in males. The gallbladder mucosa can develop multiple histomorphological changes as a sign of cholelithiasis.

REFERENCES

- [1] Mahla SG, Gajjar H, Nathani MA, Modi NP. Histopathological spectrum of gallbladder diseases: A study at tertiary care hospital of Gujarat: A rare case report. *International Journal of Clinical and Diagnostic Pathology*. 2024;7(3):267-270.
- [2] Ram Krishan Sharma, Neeraj Bisht, N.S. Neki. Histopathological examination of various lesions of gall bladder in routine 488 cholecystectomy specimens– A hospital based study.. *Int. J. Curr. Res. Med. Sci.* 2017;3(8): 112-118.
- [3] Mondal B, Maulik D, Biswas BK, Sarkar GN, Ghosh D. Histopathological spectrum of gallstone disease from cholecystectomy specimen in rural areas of West Bengal, India- an approach of association between gallstone disease and gallbladder carcinoma. *Int J Community Med Public Health* 2016;3(11):3229-3235.
- [4] Bajaj U, Kalsi D, Bajaj P, Chikhalikar S. Histopathological profile of cholecystectomy specimens at a tertiary care center: A retrospective study. *Journal of the Scientific Society*. 2024;51:609-615.
- [5] Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: cholelithiasis and cancer. *Gut and Liver*. 2012;6(2):172-87.
- [6] Bano S, Bakhsh L, Wagan G, Zardari AA, Bangulzai MA, Shaikh R. Study on morphological changes in the gall bladder mucosa associated with cholelithiasis. *Professional Med J* 2020; 27(8):1753-1762.
- [7] Tyagi BB, Manoharan N, Raina V. Risk factors for gallbladder cancer: A population based case-control study in Delhi. *Ind J Med & Paed Onco*. 2008;29(1):16-26.
- [8] Rashid K, Burki B, Ratwani G, Somro SA. Diverse histopathological changes due to cholelithiasis seen in surgically removed gall bladder specimens. *Ann Jinnah Sindh Med Uni*. 2020; 6(1):16-19.
- [9] Di Ciaula A, Portincasa P. Recent advances in understanding and managing cholesterol gallstones. *F1000Res*. 2018;7:v1000-529.
- [10] Siddiqui FG, Memon AA, Abro AH, Sasoli NA, Ahmad L. Routine histopathology of gallbladder after elective cholecystectomy for gallstones: waste of resources or a justified act? *BMC Surg* [Internet]. 2013;13(1):1-15.
- [11] Sajjad M, Khan RA, Iltaf S. Microscopic assessment of macroscopically normal gallbladder specimens: is it worth the trouble? *Rawal Med J*. 2012;37(2):172-175.
- [12] Sachidananda S, Krishnan A, Janani K, Alexander PC, Velayutham V, Rajagopal S, et al. Characteristics of gallbladder cancer in South India. *Indian J Surg Oncol*. 2012;3:228-230.
- [13] Almas T, Murad MF, Khan MK, Ullah M, Nadeem F, Ehtesham M, et al. The spectrum of gallbladder histopathology at a tertiary hospital in a developing country: A retrospective study. *Cureus*. 2020;12:e9627.
- [14] Das S, Das R, Gogoi P, Das M, Bhowal A, Singh KK. A histopathological study of gall bladder specimens in a tertiary care hospital in Assam. *Int J Acad Med Pharm*. 2023;5:1629-33.
- [15] Degloorkar S, Parab S, Shah B, Prasad S, Gore S. A retrospective single centre study on histopathological analysis of cholecystectomy specimens in a tertiary care centre in India. *Int Surg J*. 2023;10:1616-20.
- [16] Jha AK, Ali A, Kumar M, Kumar M, Bhadani PP, Murthy NB, et al. Outcome of routine histopathological examination of gallbladder specimen following elective laparoscopic cholecystectomy. *J Carcinog*. 2021;20:19.
- [17] Khan DM, Abilsh SC. Histopathological spectrum of gallbladder diseases in a tertiary care centre. *Arch Cytol Histopathol Res*. 2018;3:206-209.
- [18] Kumari M, Srivastava D, Singh A. Spectrum of histopathological lesions of gallbladder. *Int J Contemp Med Res*. 2021;8:5-7.

- [19] Savanur K, Dhar R, Sahu S. Study of histopathological spectrum of gallbladder diseases. *Int. J Med. Sci. Clin. Res. Rev.* 2022;5(5):866-871.
 - [20] Dabral M, Pant S, Rizvi G. Histomorphological spectrum of gallbladder lesions: A prospective study from a teaching hospital. *J Pathol. Nepal.* 2023;13(2):2096-2102.
 - [21] Mushtaq M, Sharma T, Sharma K, Mehta KS. Histopathological spectrum of gallbladder diseases after laparoscopic cholecystectomy: A retrospective study. *Int. J Basic Appl. Med Res.* 2017;7(1):414-419.
 - [22] Mahato, PK and Jha, RK. Study of Histopathological Examination of Gallbladder After Cholecystectomy. *Int. J. Trop. Med.* 2024;19: 116-120.
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