

The Spectrum of Histopathological Lesions in Gallbladder

*Ansari M,¹ Khan AH,² Hossain S,³ Chowdhury MS,⁴ Khanom F⁵

Abstract

Introduction: Gall bladder is very common organ to be affected by many pathological diseases which include wide spectrum of the lesions from congenital ones to inflammatory or premalignant and malignant lesions. Gall stones are the commonest gall bladder lesions with an incidence of 10 to 20% of the world population. It may be asymptomatic and incidental. Histological examination of cholecystectomy reveals the type of lesions.

Objective: To study the spectrum of gall bladder diseases with age and sex distribution.

Materials and Methods: The study was conducted in the Department of Pathology, Sylhet Women's Medical College, Sylhet. Total of 395 cholecystectomy specimen were studied.

Results:Cholelithiasis was more common in women, in age group of 40-50yrs. Pigmented stones were more common. Histopathologically the most common lesion was chronic calculus cholecystitis (205 cases), chronic cholecystitis (60), acute calculus cholecystitis (42 cases) followed by empyema (20 cases) and adenocarcinoma (4 cases) as incidental lesions.

Conclusion: Inflammatory lesions were common in gall bladder. Most common disease was chronic cholecystitis in women between 40-50years age. Malignancy of the gall bladder was rare and incidental. Gall bladder with stones of prolonged duration associated with risk of premalignant and malignant conditions making histopathological examination necessary for timely recognition of lesion.

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Keywords: Gall bladder lesions, Gall stones, Chroniccholecystitis, Carcinoma.

Introduction

Gall bladder is a pear shaped structure lying on the visceral surface of right lobe of liver.¹ Histologically, it is lined by the tall columnar epithelium bathed with mucus which separates the mucosal cells from the bile.² It has three layers namely mucosa, muscularis and adventitia.³Cholelithiasis is the commonest etiology throughout the world. There is variation in the prevalence of cholelithiasis according to the age, sex and

ethnicity.⁴ Gall stones are quite prevalent in most western countries. In United States, autopsy series have shown gall stones in 20% of women and 8% of men over the age of 40.^{1,5,6} Thenon neoplastic lesions are more common than the neoplastic lesions. Among the non neoplastic lesions acute cholecystitis, calculous and acalculouscholecystitis, chronic cholecystitis, xantho granulomatous cholecystitis and empyema of the gall bladder were noted.

1. *Dr. MAS Ansari, Associate Professor of Pathology, Sylhet Women's Medical College, Sylhet. drmasansari@gmail.com
2. Professor Dr. Amjad Hossain Khan, Professor of Pathology, Sylhet Women's Medical College, Sylhet.
3. Dr. Sabbir Hossain, Associate Professor of Pathology, North East Medical College, Sylhet.
4. Dr. Md. Shafiqul Haque Chowdhury, Assistant Professor of Pathology, Sylhet M A G Osmani Medical College, Sylhet.
5. Dr. Farida Khanom, Medical Officer of Gynae & Obs, Jalalabad Ragib-Rabeya Medical College, Sylhet.

*For correspondence

Acute inflammation of gallbladder wall usually follow obstruction of the cystic duct by a stone. Three factors—mechanical, chemical and bacterial inflammation play a role in 60-70% of patients. The organisms frequently involves include-Escherichia coli, Klebsiella, Streptococcus and clostridium spp. The usual symptoms of acute and chronic cholecystitis are low grade fever, biliarycolic, nausea, vomitings and mild jaundice.^{2,3} Majority of patients with gallstones will have asymptomatic disease, diagnosis incidentally by imaging (U/S), CT or MRI for other health problems.^{7,8} Gall stones are responsible for the irritation of the columnar epithelium and is the main underlying cause for a number of histopathological changes like acute and chronic cholecystitis, cholesterolosis and pre-neoplastic conditions like metaplasia and dysplasia, ultimately culminating into the neoplasia.^{4,9,10} That's why, patients with cholelithiasis need proper surveillance as most of the carcinoma of gall bladder are found in association of the stones.^{11,12} Cholecystectomy is the treatment of choice for all gallbladder lesions, irrespective of their nature or underlying disease process.¹ Histopathological examination is the gold standard diagnostic modality for the diagnosis of both non malignant and malignant lesions.

Objectives

1. To study the incidence of various lesions, both non neoplastic and neoplastic lesions of gall bladder.

2. To study the age, sex wise incidence of the lesions.

3. To study the clinicopathological incidence of the gallbladder lesions.

Methods

The prospective study was done in pathology department at Sylhet Women's Medical College, Sylhet from January 2015 to December 2020 (5years). The detailed history regarding age, sex, clinical features, symptoms, and radiological findings were collected from the hospital records. The cholecystectomy specimens were fixed in 10% formalin. Surgical grossing, processing was done. Histopathological examination of the H&E stained sections were done for evaluation of lesions. Ethical committee clearance was taken before the start of the study.

Results

In the 5 years period, total 395 cholecystectomy specimens were analysed. In the present study the most common lesion was chronic calculus cholecystitis (205 cases) followed by chronic cholecystitis (60), acute calculus cholecystitis (42 cases), empyema (20 cases) and adenocarcinoma (04 cases) as incidental lesions. All the lesions were noted in the age range of 10-70 yrs and most commonly found in 4th-5th decade. Male to female ratio was 1:1.68. Pigmented stones were present in 170 cases followed by cholesterol in 42 cases and mixed stones in 35 cases. (Tables I-III).

Table I: Incidence of gall bladder lesion

Lesion	Number of cases	Percentage
Acute cholecystitis	25	6.32%
Acute calculus cholecystitis	42	10.63%
Chronic cholecystitis	60	15.18%
Chronic calculus cholecystitis	205	51.90%
Empyema	20	5.06%
Acute on chronic cholecystitis	25	6.32%
Xanthogranulomatous cholecystitis	14	3.55%
Adenocarcinoma	04	1.01%
Total	395	100

Table II: Age and gender wise distribution of gall bladder lesions

Lesion	10-20		20-30		30-40		40-50		50-60		50-70		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Acute cholecystitis					02	08	03	07	12	02	11	01	718	18
Acute calculus cholecystitis					12	17	02	08	01		01	01	15	27
Chronic cholecystitis					15	19	50	10	26	06	03		25	35
Chronic calculus cholecystitis			03	22	38	54	18	35	10	18	02	05	71	134
Empyema					11	06	01			02			12	08
Acute on chronic cholecystitis					08	11	02	03		01			10	15
Xanthogranulomatous cholecystitis					04	06	01	03					05	09
Adenocarcinoma											02	02	02	02

Table III: Clinical presentation of gall bladder lesion

S. N	Lesion	Fever	Biliary colic	Nausea, Vomiting	Jaundice	Abdominal pain	Palpable mass	Asymptomatic
1	Acute cholecystitis	+	+	+	-	-	-	-
2	Acute calculus cholecystitis	-	+	+	-	-	-	-
3	Chronic cholecystitis	-	+	-	-	+	-	-
4	Chronic calculus cholecystitis	-	+	-	+	+	-	-
5	Empyema	+	+	+	+	-	-	-
6	Acute on chronic cholecystitis	+	+	-	-	+	-	-
7	Xanthogranulomatous cholecystitis	+	+	+	+	-	-	-
8	Adenocarcinoma	-	+	-	-	+	+	-

On gross examination, the size of the stones varied from 0.5 to 1.5 cm and black to yellow in colour (Fig. 1). Gall stones more commonly noted in females of 40-50yrs age group. Most common risk factor among the females was obesity followed by diabetes mellitus and pregnancy. In acute and chronic

calculus cholecystitis, grossly gallbladder was enlarged. Cut section revealed pigmented stones and mixed stones. Histology revealed normal to hyperplastic mucosa, acute and chronic inflammatory infiltrate in muscularis mucosae. In chronic calculus cholecystitis gall bladder was with firm fibrotic thick

walls, atrophic and shrunken (67 cases). Microscopy revealed flattened mucosa and chronic inflammatory infiltrate, fibrosis and vascular congestion. Gall bladder malignancy (adenocarcinoma) noted in 60-70yrs of age group. Grossly gall bladder enlarged, showed fungating fragile mass attached to fundus. Microscopy showed mucosal glands lined by row of cuboidal cells with hyperchromatic nucleus and moderate to scanty cytoplasm, frequent number of mitotic figures, cells arranged as glandular pattern with secretions in the lumen (Fig.4).



Figure 1. Gross: Gall stone

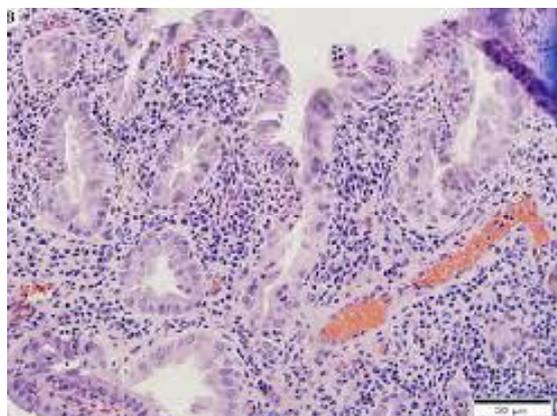


Figure 2. Chronic cholecystitis - lymphoplasmocytic infiltrate low power, (H & E Stain, 10x)

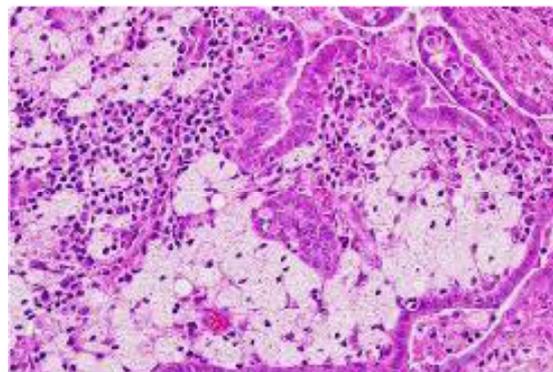


Figure 3. Xanthogranulomatous cholecystitis – foamy macrophages and giant cells ((H & E Stain, 40x)

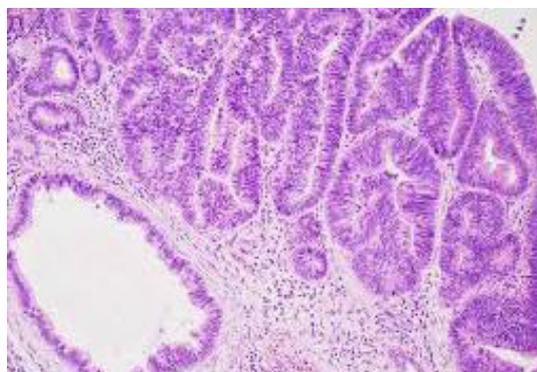


Figure 4. Well differentiated adenocarcinoma (H & E Stain, 10x)

Discussion

Cholecystitis refers to a group of disorders with varying clinical, pathogenic and pathological characteristics. The type of inflammatory cells infiltrate confirms the diagnosis.² Out of 395 cases 391 cases were inflammatory and 4 cases were neoplastic lesions. Among the inflammatory lesions most common were chronic calculus cholecystitis (205 cases) and less common were xanthogranulomatous cholecystitis (14 cases).

Out of 395 cases, 147 cases were in males and 248 cases were in females with M:F ratio of 1:1.68. Our study correlated with Narendra et al.,³ Selvi et al.¹³ and Memon et al.⁷ In the present study chronic calculus cholecystitis is

the most common lesion and correlated with Maulik et al.¹

In the present study neoplastic lesions were noted in 6th to 7th decades of life, our study correlated with Memon et al.⁷ and Maulik et al.¹ In present study maximum cases noted in females. Our study correlated with Sonam Mahana et al.,⁸ R. Thamil Selvi et al.⁴ SK Mathur et al.¹⁴ and Khanna et al.¹⁵ Sonam Mahana et al.⁸ documented that the frequency of gall stones increases with age after 40 years and common in older individuals and more in females. Female sex hormones influence hepatic bile secretion and gall bladder function.

In the present study majority of the patients were presented with right hypochondrial pain followed by fever and vomitings, study correlated with Devi Beena et al.² Narendra et al.³ Naqvi et al.⁹ and Siddhiqui et al.¹⁶ Gall stones are the major causes of morbidity. They cause various lesions like acute cholecystitis, chronic cholecystitis and carcinoma of gall bladder. In the present study cholelithiasis noted in 247 cases and in 144 cases were calculous cholecystitis. In the present study pigment stones were predominant (170 cases), Cholesterol stones in 42 cases and 35 cases were with mixed stones. Our study was similar with the study of Devi Beena et al.² and Selvi et al.¹³

Goyal et al.¹⁰ 2014 documented that mixed stones were predominant in (68%). Our study differs from Goyal et al.¹⁰ study (3.9%). In our study microscopy revealed normal wall (60%), normal mucosa (52%), erosion of mucosa and denudation (18.98%), hyperplastic mucosa (1.51%), fibrotic walls (31.06%) and serosal congestion (72%). Similar findings observed by Devi Beena et al.,² Sumit et al.¹¹ Baidya et al.¹² and Khanna R et al.¹⁵

In our study all the cases were revealed predominantly lymphoplasmocytic infiltrate in 275 cases (69.62%), mild lymphocytic infiltrate in 30 cases (7.59%), mixed inflammatory cells in 35 cases (8.86%), foamy macrophages in 14 cases (3.54%) and multinucleated giant cells in 13 cases (3.29%). In the present study eosinophils were present in 8 cases (2.02%), neutrophils in 18 cases (4.5%) and in 2 cases (0.50%) focal lymphoid aggregates were also present. Study correlated with Devi Beena et al.²

In the present study erosion of the mucosa and denudation were present in 75 cases (18.98%) and fibrosis in 125 cases (31.06%). Hyperplasia and metaplasia were noted in 06 cases (1.51%). Dysplasia and neoplasia were noted in 04 cases (1.01%). Our study correlated with Devi Beena et al.²

Conclusion

The risk factors for developing chronic cholecystitis was seen in female gender. The study emphasises the need for histopathology in all specimens of cholecystectomy. Chronic cholecystitis has a wide histomorphological spectrum. Acute on chronic cholecystitis, chronic cholecystitis and xanthogranulomatous cholecystitis are some of them. Most of them are associated with cholelithiasis at all age. The predominant histomorphological pattern seen in this study group is chronic calculous cholecystitis. Histopathological examination is convenient and gold standard method for the diagnosis of various lesions of the gall bladder.

References

1. Maulik K, Mehariya, Mahesh B. Patel, Sanjay V. Dhotre. Histopathological study of Gall bladder. *Int J Res Med.* 2014; 3(4):96-99.
2. Devi Beena, JayaprakashShetty, Varsha Jose. Histopathological spectrum of diseases in Gall Bladder. *National Journal of Lab Medicine.* 2017; 6(4):6-9.
3. Narendra GN, Gautam K. spectrum of benign gall bladder Diseases and their laparoscopic management: An experience of 100 patients. *IJHRMLP.* 2015; 1(2): 25-31.
4. R. ThamilSelvi on 78 cholecystectomies. *Tropical gastroenterology.* 2012;33(1):39-44.
5. Harrison's internal Medicine volume II 16th edition Ch 292 p 1880-1891.
6. Green field surgery – scientific principles and practice- 6th edition CH 61 p 996-1014.
7. Memon W, Khanzada TW, Samad A, Kumar B. Histopathological spectrum of gall bladder specimen after cholecystectomy. *Pak J Med Sci.* 2011; 27:533-56.
8. SonamMahana, S.V. Poflee, N.P. Pande, A.V. Shrikhande, *J Biosci Tech.* 2013; 4(3):519-524.
9. Naqvi SVH Mangi IH, Dahri FJ Khaskheli QA, Akhund AA. Frequeicy of carcinoma gall bladder in patients with cholelithiasisGomal. *Journal of Medical Sciences.* 2005;3(2).
10. Goyal S, Singla S, duhan A, Correlation between gallstones Characteristics and gall bladder mucosal changes: A retrospective study of 313 patients. *Clinical cancer Investing J.* 2014; 3:157-61.
11. Sumit G. C changes in gall bladder mucosa associated with cholelithiasis. *Int J Cur Res Rev.* 2013; 5(4):126-29.
12. Baidya R Sgel B, Baidya N L. Histopathological changes in gall bladder nucosa associated with cholelithiasis. *Journal of Pathology 01 Nepal.* 2012; 2:224-25.
13. Selvi T, Sinha P, Subramaniam PM, Konapur PG, Prabha CV.A Clinicopathological study of cholecystitis with special reference to analysis of cholelithiasis. *International Journal of Basic Medical Science.* 2011; 2(2):68-72.
14. SK Mathur et al on330 cases *Tropical Gastroenterology* 2012; 33(1):39-44.
15. Khanna R, Chansuria R, kumar M, Shukla HS. Histological changes in Ball bladder due to stone disease. *Indian J Surg.* 2006; 68:20-04.
16. Siddhiqui FG, Memon AA, Abro AH Sasoli NA, Ahmad L Routin Histopathology of gall bladder after elective cholecystectomy for gall stones: waste of resources or a justified act? *BMC Surgery.* 2013; 13:26.