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Pathology Section

Histopathological Spectrum of Diseases in Gallbladder

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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: The study was conducted from June 2013 to June 2015 in the Department of Pathology, K S Hegde Medical Academy. A total of 200 cases of cholecystectomy specimens were stained using Hematoxylin and Eosin and evaluated.

Results: Gallstones and associated diseases were more common in women within 4th to 5th decade, with a maximum number of patients being 41 to 50 years. Histopathologically the most common diagnosis was chronic cholecystitis followed by acute or chronic cholecystitis. There were 6 cases of acute cholecystitis, 5 cases of cholesterolosis, 2 cases of Xanthogranulomatous cholecystitis and one case each on empyema and carcinoma. In chronic cholecystitis and cholesterolosis female preponderance was observed while in all the other lesions male predominance was seen. Gallstones were present in 130 cases and significantly associated with various lesions. Pigment stones were most common. The present study carried out in our institution showed gallbladder malignancy was uncommon and was seen only in one case.

Conclusion: 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: Carcinoma, Cholecystitis, Cholelithiasis

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, cholesterolosis, 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

The present histopathological study was a prospective study which includes a detailed analysis of all cholecystectomy specimens presenting at the Department of Pathology, K.S. Hegde Medical Academy Karnataka, India, between June 2013 and June 2015. Autopsy cases were excluded from this study. The cases were drawn from Clinical Department of the hospital attached to Medical College. The age and sex of the patient, site of biopsy and other relevant clinical data were recorded. Patients of all ages were considered for the present study. The tissue samples were received in 10% buffered formalin and processed and 200 specimens were studied grossly and histologically. Multiple sections were taken from the larger specimens and the smaller ones fully submitted for processing by paraffin embedding. Appropriate number of sections of 4-5 micron thick tissue sections were cut and stained routinely with Hematoxylin and Eosin (H&E). There was no inter-observer variability in any of the cases. Ethical committee approval was acquired and the consent from the patients was taken in the clinical surgical department before the surgical procedure.

STATISTICAL ANALYSIS

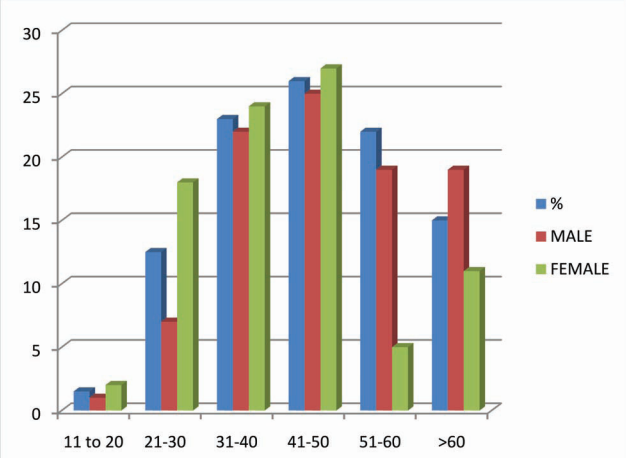
Data regarding various etiologies of gallbladder lesions was collected and analyzed using statistical tools. Chi-square test will find association between spectrums of lesions. SPSS will be used for statistical analysis.

RESULTS

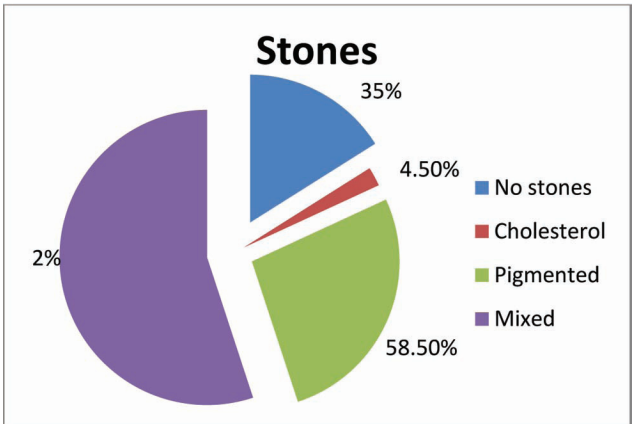
Total 200 cholecystectomy specimens were studied for a period of 3 years (June 2013 to June 2015). Gallstones and associated diseases were more common in women within 4th to 5th decade as compared to men with a M:F ratio of 0.86:1 [Table/Fig-1].

The age of patients varied from 17 to 83 years, with a maximum number of patients being 41 to 50 years (26%).

In chronic cholecystitis and cholesterolosis female preponderance was observed while in all the other lesions male predominance was seen. Gallstones were present in 130 cases (65%) and significantly associated with various lesions (p-value =0.0001, highly significant). Pigment stones were most common, followed by cholesterol and mixed stones [Table/Fig-2].

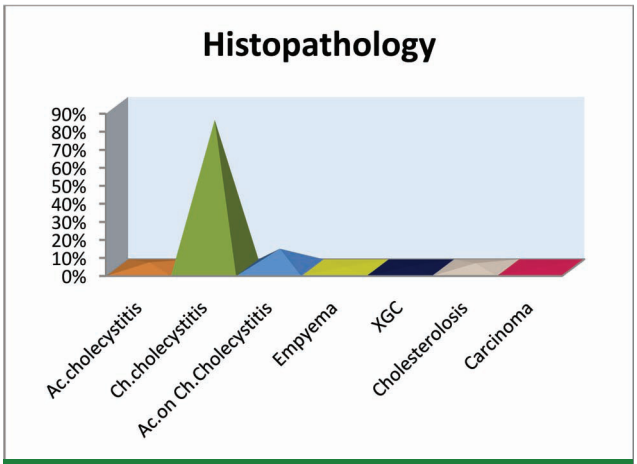


[Table/Fig-1]: Bar diagram showing age and gender distribution.

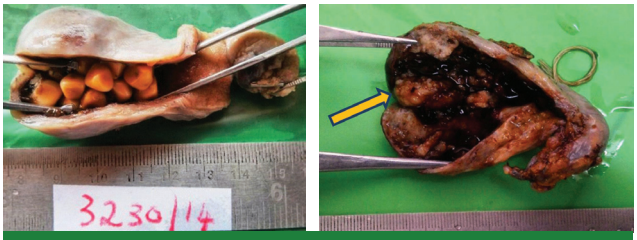


[Table/Fig-2]: Pie chart showing gallstones based on morphology.

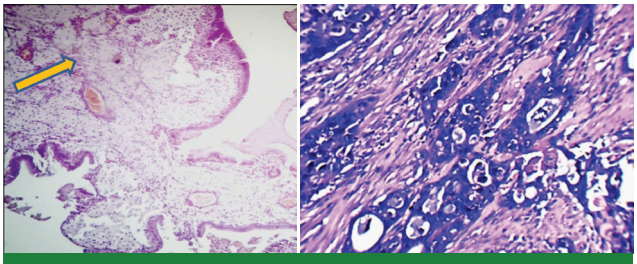
Histopathologically the most common diagnosis was chronic cholecystitis (164/200; 82%) followed by acute or chronic cholecystitis (21/200; 10.5%). There were 6 cases of acute cholecystitis, 5 cases of cholesterolosis, 2 cases of Xanthogranulomatous cholecystitis and one case each of empyema and carcinoma. The present study carried out in our institution showed gallbladder malignancy was uncommon and was seen only in one case which was diagnosed as adenosquamous carcinoma [Table/Fig-3-7].



[Table/Fig-3]: Histopathological lesions in cholecystectomy specimens.



[Table/Fig-4]: Gallbladder with cholesterol gall stones.
[Table/Fig-5]: Cut surface showing ulceroproliferative growth.



[Table/Fig-6]: Cholesterolosis,10X.
[Table/Fig-7]: Adenosquamous carcinoma.

DISCUSSION

The term cholecystitis refers to a group of disorders that vary in clinical, pathogenetic and pathological characteristics. Characterization of inflammatory pattern helps the pathologists to confirm the diagnosis. Out of 200 cases, 199 cases were non-neoplastic or inflammatory lesions and one case was malignant lesions. In all 82% of the cases were chronic cholecystitis. Most of the cases of chronic

cholecystitis were associated with cholelithiasis. Chronic acalculous cholecystitis was much less common in our study.

In the present study of 200 cases, there were 93 (46.5%) men and 107 (53.5%) women with a M: F ratio of 0.86:1, which was consistent with Narendra et al., [6], Selvi et al., [7], and Memon et al., [8] [Table/Fig-8,9].

Age Group	Present Study	Awasthi (2015) [9]	Memon et al ., (2011) [8]	Nigam et al ., (2013) [10]	Narendra et al ., (2015)[6]
11-20	1.5%	2.9%	0.0%	0.0%	10%
21-30	12.5%	18.2%	13.8%	9.6%	22%
31-40	23%	23.5%	31.9%	20.38%	37%
41-50	26%	27.2%	31.9%	41.92%	15%
51-60	22%	19.5%	20.5%	18.46%	08%
>60	15%	8.7%	1.7%	9.61%	08%

[Table/Fig-8]: Comparison of age group distributions.

Age group (in yrs)	Present Study		Memon et al., (2011)[8]		Arathi et al., (2013)[11]		Selvi et al., (2011)[7]	
	M	F	M	F	M	F	M	F
11-20	33.3%	66.7%	20%	80%	0.0%	0.0%	0.0%	100%
21-30	28%	72%	11.5%	88%	25.6%	74%	46.2%	53.8%
31-40	47.8%	52.2%	11%	89.5%	33.3%	66.6%	70%	30%
41-50	48.1%	51.9%	11.2%	88%	27.7%	72.2%	93.3%	6.6%
51-60	43.2%	56.8%	5.5%	94.6%	15.5%	84.4%	50%	50%
>60	63.3%	36.7%	50%	50%	20%	80%	37.5%	62.5%

[Table/Fig-9]: Comparison of gender distributions with age group.

Out of 200 cases 77% patients were complaining of pain in the epigastrium, followed by pain and vomiting (32%). None of the patients has presented with any evidence of malignancy clinically. This finding was going in correlation with studies done by Narendra et al., [6] , Naqvi et al., [12] and Siddhiqui et al., [13].

Gallstones are a major cause for mortality and morbidity throughout the world. They are associated with various lesions like acute cholecystitis, chronic cholecystitis with its variants and gallbladder carcinoma. In the present study 130 cases (65%) had stones while in 70 cases (35%) there were no stones. Pigmented stones were more predominant 117(58.5%) followed by 9 (4.5%) cases having cholesterol stones and 4(2%) patients having mixed stones, which was similar to the study conducted by Selvi et al., [7] who evaluates 78 cholecystectomy specimens out of which 65 cases (83.3%) had stones and 13 cases (16.6%) was presented with no calculi and majority were pigmented stones (60.2%). In contrast, study done by Goyal et al., [14] with 346 cholecystectomy specimens, got predominantly mixed stones in 213 cases (68%) [Table/Fig-10].

HP Lesions	Present Study	Selvi et al., (2011) [7]	Arathi et al ., (2013) [11]	Goyal et al., (2014) [14]
Acute Cholecystitis	3.5%	2.5%	8.4%	9.5%
Chronic Cholecystitis	82%	87%	86.3%	57.8%
Acute or Chronic Cholecystitis	10%	0.0%	0.0%	9.5%
Empyema	0.5%	1.2%	0.0%	0.0%
Xanthogranulomatous Cholecystitis	1%	1.2%	1.8%	2.5%
Cholesterolosis	2.5%	2.5%	2.9%	3.5%
Adenosquamous Carcinoma	0.5%	1.2%	1.6	1.2%

[Table/Fig-10]: Comparison of HP Lesions.

In the present study the normal wall and mucosa were seen predominantly constituting 105 cases (52.5%) and 131 cases (65.5%) respectively which was concordant with studies done by Sumit G [15], Baidya R et al., [16] and Khanna R et al., [17]. Serosa of the gallbladder was congested in majority of the patients 128 cases (64%) which was in contrast with other studies.

In this study, all the cases had inflammation (100%), in which predominant was lymphoplasma cytic infiltrate in 144 cases (72%), mild lymphocytic infiltrate in 8 cases (4%).23 cases (11.5%) had mixed inflammation. Eosinophils and neutrophils were present in 2 cases (1%) and 6 cases (3%) respectively. One case showed focal lymphoid aggregates. Foamy histiocytes (5.5%) and multinucleated giant cells (1.5%) were also seen. Ulceration of mucosa (20%), denudation (18.5%), fibrosis (39%), R-A Sinus (24%), hyperplasia (1.5%) and metaplasia (0.5%) were also seen. Dysplasia was noted in 3 cases (1.5%) and neoplasia was seen in one case (0.5%).

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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