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Histopathological spectrum of gallbladder diseases: A study at tertiary care hospital of Gujarat

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Abstract

Introduction: Gall bladder (GB) diseases comprise one of the most common digestive system diseases. The histopathological patterns represent a spectrum, ranging from cholecystitis to gallbladder carcinoma. Cholecystectomy is one of the most frequently performed emergency surgery as the gallstones are one of the major causes of morbidity and mortality all over the world. Clinical diagnosis of the gall bladder diseases is made, based on physical examination and history along with radiological and laboratory findings. However, histopathological examination is the gold standard for the diagnosis. Histopathological examination reveals an unusual diagnosis bearing significant implications on the treatment, prognosis and outcome of the patient.

Aim and Objectives: The objective of this study was to observe the histopathological spectrum of gallbladder diseases, to evaluate age and sex wise distribution of gallbladder diseases and to compare results with other studies.

Materials and Methods: An observational study was carried out from January 2023 to December 2023 at Narendra Modi Medical College and Sheth L.G. General Hospital, Maninagar, Ahmedabad. Histopathological records of 380 gallbladder specimens obtained from cholecystectomy were analysed. Tissues received in 10% formalin from various clinical departments, were processed and studied under hematoxylin and eosin stain.

Observation and Results: Out of 380 cases, 300 were females and 80 were males. The most common histopathological diagnosis was chronic calculous cholecystitis (n=306, 80.5%), followed by chronic cholecystitis (n=50, 13.16%), acute cholecystitis (n=10, 2.63%) and acute on chronic cholecystitis (n=8, 2.10%). Adenocarcinoma of gallbladder constitutes least number of cases (n=6, 1.58%).

Conclusion: Clinical presentation of diseases of gall bladder is uncertain. Routine histopathological examinations of resected gallbladder specimens are important to identify premalignant or malignant lesions.

Keywords: Gallbladder diseases, cholecystectomy, histopathology

Introduction

The gall bladder is a small hollow organ located in the right upper quadrant of the abdomen. It is an important part of the biliary system in our body. The liver produces bile, which is stored in the gall bladder and later released in the intestine. Any obstruction to this flow of bile causes a backup of bile in the gall bladder, causing its inflammation, known as cholecystitis [1]. Cholecystectomy is one of the most frequently performed emergency abdominal operation as the gallstones are one of the major causes of morbidity and mortality all over the world [2]. With westernization of life style in India incidence of gallstone is increasingly and mostly cholecystectomy specimens are associated with calculous cholecystitis [3]. Gall Bladder (GB) diseases are one of the most common digestive system diseases next to Gastro-esophageal Reflux Disease (GERD) [4]. Persons with long history of chronic gallbladder diseases including gall stones are at higher risk for developing gallbladder carcinoma (GBC) [5]. Gall bladder diseases is detected routinely based on clinical history and physical examination along with radiological and laboratory findings. However, histopathological examination is being superior to all other investigations for the diagnosis. Histopathological examination many times reveals an unusual diagnosis bearing significant implications on the treatment, prognosis and outcome of the patient. Hence, present study was undertaken to evaluate the role of histopathological examination in cholecystectomy specimens [6].

Materials and Methods

An observational study was carried out from January 2023 to December 2023 at Narendra Modi Medical College and Sheth L.G. General Hospital, Maninagar, Ahmedabad. Histopathological records of 380 gallbladder specimens obtained from cholecystectomy were analysed. Tissues were received in 10% formalin from various clinical departments. Gross examinations of all the specimens were done. Bits from one representative full-thickness section from the fundus, one through the body and one through neck of the gallbladder were taken. When focal lesions were present additional section were taken. Sections were processed by routine paraffin embedding technique and stained with Hematoxylin & Eosin stain. Slides were examined and histopathological diagnoses were given. The diagnosis, typing of and staging of tumors were made following the latest guidelines of World Health Organization. The collected data were recorded in Microsoft Excel spreadsheet and were analyzed. The results were expressed in numbers and percentages.

Observation and Results

In present study, the maximum number of patients were in the 4th and 3rd decades of life which constitutes 26.58% (n=101) and 22.63% (n=86) cases respectively. Whereas the youngest age group (0-10 years) was least affected, with only 1 case (0.26%) reported. (Table 1)

In our study, chronic calculous cholecystitis (80.53%, n=306) was most common pathology followed by chronic cholecystitis (13.16%, n=50), acute cholecystitis (2.63%, n=10), acute on chronic cholecystitis (2.10%, n=08) and least common adenocarcinoma of gallbladder (1.58%, n=06). (Table 2)

The present study consisted of 380 cases, with a majority being female (78.95%, n=300) and the remaining being male (21.05%, n=80). Female preponderance was seen in all gall bladder histopathology. There were 58 males and 248 females with a M: F ratio of 1:4.2 in chronic calculous cholecystitis, whereas adenocarcinoma was being least common pathology showed 1 male and 5 female cases with a M: F ratio of 1:5. (Table 3, Figure 1)

Discussion

Gallbladder is an organ which has a wide spectrum of lesions frequently presented as inflammatory diseases [7].

The prevalence of gallbladder carcinoma is less in general

population, it still accounts for 80% of all biliary tract cancers and is the 5th most common gastrointestinal malignancy in India following colon, pancreas, stomach and esophagus [8]. Cholecystectomy is a widely performed surgical procedure and is implicated in the management of a multitude of pathologies, including cholelithiasis, cholecystitis, gallbladder polyps, and gallbladder carcinoma [9]. While benign themselves, gallstones have been intricately linked with an increased risk of hepatobiliary and gallbladder carcinoma [10]. Due to its late presentation in the disease course, gallbladder carcinoma purports a particularly poor prognosis and dismal five-year survival rates [11].

In the present study, out of 380 cholecystectomy specimens analysed, it was concluded that women were more likely to have gall bladder lesions (n=300, 78.95%) than men (n=80, 21.05%). This findings were comparable to research done by Almas T *et al.* (2020) [12], Kumari Manu *et al.* (2021) [13], Savanur K *et al.* (2022) [14] and Dabral, M. *et al.* (2023) [15] showed high incidence in female population. (Table 6)

In the present study, gall bladder histopathology were more frequently found in 4th decade of life. This is concordance with study done by Degloorkar S *et al.* (2023) [16] and Savanur K *et al.* (2022) [14].

Chronic calculous cholecystitis was the most common pathology observed in our study. This was similar to study conducted by Mushtaq *et al.* (2017) [17] and Khan *et al.* (2018) [18]. Least commonly detected pathology was adenocarcinoma of gallbladder comprising 1.58% cases, which was matched with study done by Mushtaq *et al.* (2017) [17] and Khan *et al.* (2018) [18] showed incidence of 1.6% and 1% cases respectively.

Gall stones are occur more likely in women because estrogen triggers the release of biliary cholesterol, which makes bile more supersaturated with cholesterol and increases the risk of cholelithiasis [19, 20]. Despite the advent of modern diagnostic techniques, gallbladder carcinoma (GBC) is still diagnosed at late stage, leading to poor prognosis. Since GBC often remains clinically silent in its initial stages, it can evade prompt detection. However, histopathological examination, improved imaging technique, and specific diagnostic markers can assist in yielding a timely diagnosis, thereby improving disease outcome. Thus it is important to emphasize the relevance of screening high-risk groups, including regions with high incidence rate, women and patient with a history of gallstones or biliary tract disease [21].

Table 1: Age wise distribution

Age group (years)	Total No. of cases	Percentage
0-10	01	0.26%
11-20	12	3.16%
21-30	86	22.63%
31-40	101	26.58%
41-50	75	19.74%
51-60	66	17.37%
Above 60	39	10.26%
Total	380	100%

Table 2: Distribution of cholecystectomy specimens according to histopathological diagnosis

Histopathological diagnosis	No. of cases	Percentage
Chronic calculous cholecystitis	306	80.53%
Chronic cholecystitis	50	13.16%
Acute cholecystitis	10	2.63%
Acute on chronic cholecystitis	08	2.10%
Adenocarcinoma	06	1.58%
Total	380	100%

Table 3: Distribution of histopathological diagnosis according to gender

Histopathology diagnosis	Female	Percentage	Male	Percentage
Chronic calculous cholecystitis	248	81.05%	58	18.95%
Chronic cholecystitis	34	68%	16	32%
Acute cholecystitis	08	80%	02	20%
Acute on chronic cholecystitis	05	62.5%	03	37.5%
Adenocarcinoma	05	83.33%	01	16.67%

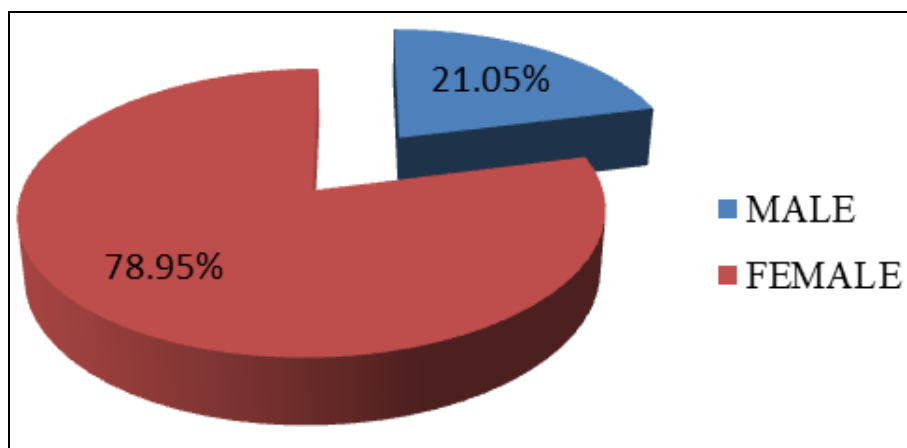


Fig 1: Gender wise distribution

Table 4: Comparison of histopathological diagnosis with other studies

Histopathological diagnosis	Mushtaq <i>et al.</i> 2017 ^[17]	Khan <i>et al.</i> 2018 ^[18]	Savanur K <i>et al.</i> 2022 ^[14]	Present study (%)
Chronic calculous cholecystitis	62.5%	63.9%	59.4%	80.53%
Chronic cholecystitis	-	18.7%	33.1%	13.16%
Acute cholecystitis	-	-	0.4%	2.63%
Acute on chronic cholecystitis	12.5%	-	4%	2.10%
Adenocarcinoma	1.6%	1%	0.2%	1.58%

Table 5: Gender wise comparison with other studies

Gender	Almas T, <i>et al.</i> 2020 ^[12]	Kumari Manu, <i>et al.</i> 2021 ^[13]	Savanur K, <i>et al.</i> , 2022 ^[14]	Dabral M, <i>et al.</i> 2023 ^[15]	Present study (%)
Male	25.3%	18.2%	41%	21.71%	21.05%
Female	74.7%	81.8%	59%	78.29%	78.95%
Total	100%	100%	100%	100%	100%

Conclusion

Our study showed spectrum of lesions ranging from chronic calculous cholecystitis to adenocarcinoma on histopathological analysis of the cholecystectomy specimens. Though, malignancy of gallbladder presents late in the course and with nonspecific symptoms, which can misguide the clinicians. Therefore, it is imperative to conduct routine histopathological examinations to exclude premalignant conditions.

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