

Research Article

Histological study of human gallbladder

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Abstract

Background & objectives: Gallbladder is one of the organs having a wide spectrum of diseases ranging from congenital anomalies, calculi and its complications, non-inflammatory, inflammatory to the neoplastic lesions. Gallstones are one of the major causes of morbidity and mortality all over the world affecting 10% of adult population. While Gallbladder cancer is a disease of the elderly; it affects patients in their 70s, with a female to male ratio 5:1. The aim was to study the distribution with respect to age and sex and the usefulness of histological evaluation of gallbladder.

Methods: This is a retrospective study of 100 cases of gallbladder lesions during the period of April 2010 to October 2011.

Results: Lesions of gallbladder were more common seen in females with a male to female ratio of 1:2.3. Gallbladder lesions were more commonly found in 4th & 5th decades of the patients. Out of 100 cases, Non- neoplastic lesions found in 95 cases (95%) and Neoplastic lesion found in 5 cases (5%) with the ratio being 19:1. The commonest histological observation found was chronic calculous cholecystitis in 46 cases (46%) followed by acute calculous cholecystitis in 9 cases (9%).

Conclusion: Female in their 4th decade are common sufferer of Gallbladder diseases. Gallstones and their consequences are the major factors for histomorphological changes of cholecystitis. Histological examination help where adjuvant treatment is depend up on grade, severity & Extent of invasion and also to rule out suspicion about malignancy.

Keywords: Cholecystectomy, Cholecystitis, Gall bladder, Histology

1. Introduction

Gallbladder is one of the organs having a wide spectrum of diseases ranging from congenital anomalies, calculi and its complications, non-inflammatory, inflammatory to the neoplastic lesions. So the classification of various histomorphological types of gallbladder lesions is important to categorize into non-neoplastic and neoplastic lesions of gallbladder.¹

Gallstones are one of the major causes of morbidity and mortality all over the world. It affects 10% of adult population. Its incidence increases progressively with age. Stones in the gallbladder most likely to enter in common bile

duct and prevent bile flow into duodenum, hence leading to obstructive or surgical jaundice.

Gallbladder cancer is a disease of the elderly; it affects patients in their 70s, with a female to male ratio 5:1. Gallbladder carcinoma is known as an aggressive malignancy, with most large series reporting 5-year survival rates of 5-15%. In 25% of the patients the cancer is localised to gallbladder wall, in 35% it is spread beyond the wall to adjuvant soft tissue, and in 45% distant metastases occur.

Cholecystectomy is a common surgical procedure. Fortunately, gallbladder cancer is found in approximately 1% of all cholecystectomies for cholelithiasis in spite of the close relationship between gallstones and gallbladder cancer. Gallstones are present in 75-90% of gallbladder cancers.

Diseases of gallbladder are manifested as biliary pain in epigastrium and right upper quadrant of abdomen, radiating to interscapular area, right scapula and shoulder, associated with nausea, vomiting, jaundice, anorexia, fever and chills. Identification of gallbladder lesions requires proper investigations including plain abdominal x-ray, trans-abdominal ultrasonography, radioisotope scans, and proper histological examination. The value of histological examination is well explained in patients with gallbladder lesions where adjuvant treatment is dependent upon grade, severity and extent of invasion of disease. Many patients may be suspected of having a malignancy on pre-operative assessment in these cases histological examination may aid to rule out suspicion.

This study was aim to study the distribution with respect to age and sex and the usefulness of histological evaluation of Gallbladder.

2. Material and Method

This is a retrospective study of 100 cases of gallbladder lesions. The material for the present study comprised of specimens received at Central Laboratory, Pathology Department, B.J.Medical College, Ahmedabad between April 2010 to October 2011, from the patients admitted in Civil Hospital, Ahmedabad.

The resected specimens consisted of 51 Laparoscopic cholecystectomy, 33 open cholecystectomy, 10 both Laparoscopic and open cholecystectomy and 6 other surgeries. All the details of the cases consisting of age & sex, clinical history, relevant investigations, gross features (size, shape, consistency and external surface), microscopic features and final diagnosis were noted.

The specimens were fixed in 10% formalin for 24-48 hours. Tissues were taken from the pathological lesions and processed by standard technique in the Yorco Automatic Tissue Processor for 24 hours; and paraffin blocks were made. The blocks were cut to give 4-5 micron thick sections and stained with haematoxylin and eosin. The slides were made, labelled and mounted in DPX. All the slides were studied with 10X and 40X magnification of light microscope.^{2,3}

3. Result

Out of 100 cases, 70 cases were of females and 30 cases were of males. Lesions of gallbladder were more common in females than in males with a male to female ratio of 1:2.3.

Table 1 : Sex distribution of lesions of gallbladder

Sex	No. of cases	Percentage	Male : Female
Male	30	30%	3:7 (1:2.3)
Female	70	70%	

Lesions of gallbladder were most common in the 4th and 5th decades, with 25% of cases occurring in the 4th decade and 26% occurring in the 5th decade. The youngest patient was of 8 years and the oldest patient was of 75 years.

Table 2 : Age Distribution of lesions of gallbladder

Age group in years	≤20	21-30	31-40	41-50	51-60	>60	Total
No. of Cases	5	18	25	26	20	6	100

Out of 100 cases we studied, Non- neoplastic lesions constituted 95 cases (95%) and Neoplastic lesion constitute 5 cases (5%) with the ratio being 19:1.

Table 3 : Morphological types of lesions of gallbladder

Type	Number of cases	Ratio Non-neoplastic : Neoplastic
Non-neoplastic	95	19:1
Neoplastic	5	
Total	100	

Figure 1: Normal Human Gall-bladder Histology [X40]



On histological examination gallbladder shows infiltration of lymphocytes, macrophages and plasma cells in lamina propria. Epithelium shows variable changes from atrophic or hyperplastic to dysplastic. In 9 cases it shows edema of the epithelium with infiltration of lymphocytes suggesting of acute cholecystitis [Figure 2]. Also there is presence of outpouchings of mucosa through the muscles of Gallbladder wall (Rokitansky-Aschoff Sinuses) in more than 50 % cases. Which are characteristic but not diagnostic feature of chronic cholecystitis [Figure 3]. Also muscle layer shows changes of hypertrophy.

Figure 2: Acute Cholecystitis [X40]

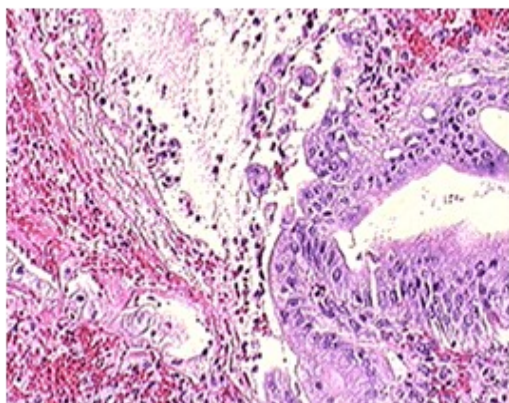
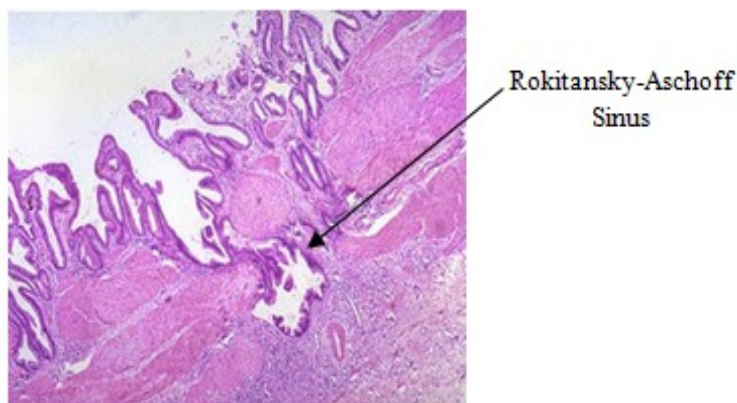


Figure 3: Chronic Cholecystitis[X40]



The commonest histomorphological observation in the present study was chronic calculous cholecystitis 46 cases (46%) followed by acute calculous cholecystitis 9 cases (9%). While in present study Benign lesions of gallbladder were 3 cases (3%) and malignant lesions were 2 cases (2%).

Table 4 : Histomorphological types of Lesions of Gallbladder

Type of Lesion	No. of cases	Percentage (%)
Non-neoplastic Lesion		
• Acute calculous cholecystitis	9	9
• Acute cholecystitis	8	8
• Calculous cholecystitis	7	7
• Chronic calculous cholecystitis with changes of cholesterosis, Tuberculous infiltration present	1	1
• Chronic calculous cholecystitis	46	46
• Chronic calculous cholecystitis with area of atrophy of mucosa	2	2
• Chronic calculous cholecystitis with evidence of empyema of gallbladder	1	1
• Chronic calculous cholecystitis with non specific lymphadenitis	3	3
• Chronic cholecystitis	4	4
• Pyocele	8	8
• Follicular cholecystitis with chronic non specific lymphadenitis	1	1
• Xanthogranulomatous cholecystitis	2	2
• Follicular cholecystitis	2	2
• Gallbladder show poor presentation with autolytic changes with presentation of chronic cholecystitis	1	1
Neoplastic Lesion		
• Chronic cholecystitis with cholesterosis	1	1
• Chronic calculous cholecystitis with changes of cholesterosis, Tuberculous infiltration present	1	1
• Chronic cholecystitis with pyloric metaplasia of mucosal gland and solid area shows cholesterol granuloma	1	1
• Moderately differentiated adenocarcinoma	1	1
• Poorly differentiated adenocarcinoma	1	1
Total	100	100%

4. Discussion

Gallstone & its complications are one of the major causes of morbidity and mortality all over the world affecting 10% of adult population. While Gallbladder cancer is a disease of the elderly; it affects patients in their 70s.

In present study lesions of gallbladder were more common in females than in males with a male to female ratio of 1:2.3 which was similar to other study carried out by Khanna *et al*⁴; Asuquo *et al*⁵; Zoysa *et al*⁶; Tantia *et al*⁷ and J. A. *et al*⁸ reported male to female ratio of 1:4.8, 1:5, 1:3, 1:2.8 and 1:4 respectively.

Khoo *et al*⁹, Khanna *et al*⁴ and Abdul samad *et al*¹⁰ reported that majority of non-neoplastic lesions of Gallbladder occurred in 3rd to 5th decades. While Bazoua *et al*¹¹ studied that neoplastic lesions developed in patients of age more than 50 yrs and maximum in age group 50 to 70 years. The present study is comparable to the above studies (4th and 5th decades).

Ojed *et al*¹² reported that 96 % non-neoplastic lesion and 4% neoplastic lesions with ratio of 24:1. Khanna Rahul *et al*⁴ reported ratio of non-neoplastic to neoplastic lesion was 16:1. The present study is comparable to the above studies (19:1).

Pandey *et al*¹³ reported in his study that out of 69 patients 51(73.9%) shows adenocarcinoma, 12 (17.4%) shows mucinous carcinoma, 6(8.7%) shows papillary adenocarcinoma on histopathological examination. Asuquo *et al*⁵ reported that out of 18 specimens studied 9(50%) specimens shows calculous cholecystitis, 8(44.4%) have acalculous cholecystitis and 1(5.6%) has carcinoma of gallbladder. Shrestha *et al*¹⁴ studied 668 specimens, among them 643(96.3%) have non-neoplastic lesions, 1(0.15%) has gallbladder adenoma of pyloric type, 22 (3.29%) have primary gallbladder malignancy, 2(0.3%) shows metastatic cholangiocarcinoma of gallbladder. F P Dix *et al*¹⁵ noted that out of 1308 specimens, 1249(95.5%) shows chronic calculous cholecystitis, 38(2.9%) shows acute cholecystitis or empyema, 5(0.4%) shows primary gallbladder carcinoma and 16(1.2%) shows normal features of gallbladder. D. Chattopadhyay *et al*¹⁶ noted that in 23 post-cholecystectomy specimen 12(52.1%) have gallstones, 7(30.4%) have cholesterol polyps, 3(13%) have adenocarcinoma, 1(4.3%) has normal features of gallbladder on histology. In the present study, among all the lesions of gallbladder, chronic calculous cholecystitis (46%) was the commonest histological finding which is comparable with above study.

5. Conclusion

Female in their 4th decade are common sufferer of Gallbladder diseases. Gallstones and their consequences are the major factors for histomorphological changes of cholecystitis. Histological examination help, where adjuvant treatment is depend up on grade, severity & Extent of invasion and also to rule out suspicion about malignancy.

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