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# HISTOPATHOLOGICAL SPECTRUM OF GALLBLADDER LESIONS IN CHOLECYSTECTOMY SPECIMENS

Pathology

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## ABSTRACT

**Background:** Gallbladder carcinoma is the most common type of biliary tract carcinoma and is the fifth most common type of digestive tract malignancies. Gallbladder carcinoma does not show defined and specific signs and symptoms. All gallbladder specimens should be examined carefully as significant pathology may be present with normal gross morphology. Cholecystectomy for gall bladder diseases is the most commonly performed surgical procedure. To detect and treat carcinoma of gallbladder to be earlier, the precise relationship between benign lesions of gallbladder and carcinoma needs to be established. Hence present study was undertaken to become familiar with the pathological lesions of the gallbladder. The data was collected from 150 cases of surgically resected cholecystectomy specimens sent in 10% formalin solution. The specimens were examined grossly and processed routinely. Sections were stained with haematoxylin and eosin. The gross and histopathological findings examined and noted. Out of 150 cases of which 114 cases were female and 36 cases were male. The Male: Female ratio was 3.1:1 in our study. The most common gallbladder lesion was cholecystitis (94%) and cholesterolosis (4.6%). Benign and malignant tumours were least common (0.7% each). From our study result we conclude that the lesions of gallbladder were common in the 5th decade and showed female predominance. Cholecystitis (94%) was the most common gallbladder lesion. Among epithelial changes in gallbladder lesions, metaplasia (18.7%) was more common than hyperplasia (10.7%). Antral metaplasia was more common than intestinal metaplasia. Spongioid hyperplasia was more commonly observed than papillary hyperplasia and adenomyomatous hyperplasia. Malignant tumours constituted 0.7% of all gallbladder lesions.

## KEYWORDS

Chronic cholecystitis, follicular cholecystitis, xanthogranulomatous cholecystitis, gall bladder disease, carcinoma of gall bladder.

## INTRODUCTION:

The gallbladder is among the most commonly surgically resected organs.[1,2] The number of cholecystectomies has increased more than 50% in the past decade.[1] Cholelithiasis, cholecystitis and tumours of gallbladder constitute the main bulk of the cases.

Gallbladder carcinoma is the most common type of biliary tract carcinoma and is the fifth most common type of digestive tract malignancies.[3] The frequency of unsuspected gallbladder carcinoma ranges from 0.3% to 0.5% in western countries.[4] In India, high rates of gallbladder carcinoma were found in northern states, frequency highest being in Delhi and Kolkata.[5] The reported frequency ranged from 10/100000 in Delhi to 2-3/100000 in South India.[6]

It is still difficult to differentiate benign polyp and malignant polyp of gallbladder despite many available imaging modalities such as ultrasonography (USG), computed tomography (CT), magnetic resonance imaging (MRI), endoscopic retrograde cholangiography and endoscopic ultrasonography.[7]

Gallbladder carcinoma does not show defined and specific signs and symptoms. Hence, there are no well established criteria for precise and early diagnosis.[8] One way to improve the prognosis of these patients is to diagnose gallbladder carcinoma in its early stages. The great majority of invasive carcinoma of gallbladder has simple and well known microscopic features. The early precursor lesions are poorly described and are relatively unknown to many pathologists and clinicians. If carcinoma of gallbladder is to be detected and treated earlier, the precise relationship between benign lesions of gallbladder and carcinoma needs to be established. The first step along this line is to become familiar with the early lesions of this tumour. All gallbladder specimens should be examined carefully as significant pathology may be present with normal gross morphology.[9] Non-neoplastic changes such as metaplasia, hyperplasia, Rokitansky-Aschoff sinuses and Luschka's ducts are usually ignored.

Hence to become familiar with the pathological lesions of the gallbladder, this study of histopathology of lesions of gallbladder has been undertaken.

## MATERIAL AND METHODS:

The present prospective study was undertaken in histopathology section of department of pathology of a medical college after institutional ethics committee approval.

The data was collected from 150 cases of surgically resected cholecystectomy specimens sent in 10% formalin solution. Purposive information including age, sex, chief complaints, laboratory investigations, pre-operative imaging (USG/CT Scan) and intraoperative findings were noted and relevant clinical data was collected. The glass slides of histopathological sections and paraffin blocks were retrieved from the department of pathology. The relevant clinical details were taken from the patients.

A detailed study of the cholecystectomy specimens were done, with respect to size, external surface, mucosal surface and the presence of gallstones. The findings were noted down. The entire gallbladder was opened longitudinally, because the mucosa would otherwise quickly undergo autolytic changes. Lymph nodes were searched along the gallbladder neck. One section each was taken from the fundus, body and neck. Additional sections were taken from the grossly abnormal appearing sites like mucosal ulceration, polypoidal mass, gallbladder wall thickening, nodularity of mucosa and change in the colour of the mucosa.

Routine processing and paraffin embedding of the sections were done. The sections were cut 5 microns thick and stained with hematoxylin and eosin.

## RESULTS:

**Table 1: Distribution of gallbladder lesions according to age (years)**

| Age (years) | No. of cases | Percentage |
|---|---|---|
| 11 – 20 | 04 | 2.7% |
| 21 – 30 | 15 | 10.0% |
| 31 – 40 | 34 | 22.7% |
| 41 – 50 | 49 | 32.6% |
| 51 – 60 | 28 | 18.7% |
| 61 – 70 | 20 | 13.3% |
| Total | 150 | 100% |

**Table 2: Distribution of gallbladder lesions according to sex**

| Sex | No. of cases | Percentage |
|---|---|---|
| Female | 114 | 76% |
| Male | 36 | 24% |
| Total | 150 | 100% |

**Table 3: Distribution of non-neoplastic and neoplastic lesions of gallbladder**

| Type of lesions | No. of cases | Percentage |
|---|---|---|

| | | |
|---|---|---|
| Non-neoplastic lesions | 148 | 98.6 % |
| Neoplastic lesions | 02 | 1.4 % |
| Total | 150 | 100% |

**Table 4: Histopathological distribution of various gallbladder lesions**

| Histopathological diagnosis | No. of cases | Percentage |
|---|---|---|
| Cholecystitis | 141 | 94.0% |
| Cholesterolosis | 07 | 4.6% |
| Benign tumours | 01 | 0.7% |
| Malignant tumours | 01 | 0.7% |
| Total | 150 | 100% |

**Table 5: Distribution of various types of cholecystitis**

| Types of cholecystitis | No. of cases | Total no. of cases | Percentage |
|---|---|---|---|
| Acute cholecystitis | 08 | 150 | 5.3% |
| Acute on chronic cholecystitis | 15 | 150 | 10% |
| Chronic cholecystitis | 108 | 150 | 72% |
| Follicular cholecystitis | 06 | 150 | 4% |
| Xanthogranulomatous cholecystitis | 04 | 150 | 2.7% |
| Total | 141 | 150 | 94% |

**Table 6: Distribution of cholecystectomy specimens according to presence of calculi**

| Specimen | No. of cases | Percentage |
|---|---|---|
| Calculus cholecystectomy specimen | 100 | 66.7% |
| Acalculus cholecystectomy specimen | 50 | 33.3% |
| Total | 150 | 100% |

**Table 7: Distribution of epithelial changes in gallbladder lesions**

| Epithelial changes | No. of cases | Total no. of cases | Percentage |
|---|---|---|---|
| Metaplasia | 28 | 150 | 18.7% |
| Hyperplasia | 16 | 150 | 10.7% |
| **METAPLASIA** | | | |
| **Epithelial changes** | **No. of cases** | **Total no. of cases** | **Percentage** |
| AntralMetaplasia | 27 | 28 | 96.4% |
| Metaplasia | 1 | 28 | 3.6% |
| **HYPERPLASIA** | | | |
| Spongioid hyperplasia | 14 | 16 | 87.5 % |
| Papillary hyperplasia | 1 | 16 | 6.25% |
| Adenomyomatous hyperplasia | 1 | 16 | 6.25% |

## DISCUSSION:

In the present study the peak age group of all gallbladder lesions was 41- 50 years which is comparable with study done by Laydeet al[10] who also reported the peak age group of gallbladder lesions in the 5th decade. Gallbladder lesions were more common in females. We got female: male ratio of gall bladder lesions as 3.1:1 which was comparable with the results reported by Shrestha et al[11] (3:1).

Common chief complain associated with gallbladder lesions were pain in right hypochondrium, nausea, vomiting, jaundice, fever, dyspepsia. The most common clinical feature in the present study was pain in right hypochondrium (85.3%) and the least common symptom was jaundice.

We found non-neoplastic lesions were 98.6% and neoplastic lesions were 1.4%. The frequency of non-neoplastic and neoplastic lesions of gallbladder in the present study was almost comparable to the studies reported by Zahrani et al[2] who found 99.1% non-neoplastic lesions and 0.9% neoplastic lesions and Chin et al[12] who reported 99.3% non-neoplastic lesions and 0.7% neoplastic lesions.

In the present study, the most common gallbladder lesion was cholecystitis (94%), cholesterolosis 4.6%. Benign and malignant tumours were least common (0.7% each).

Chronic cholecystitis was found in 108(72%) cases. The frequency of chronic cholecystitis reported by Tyagi et al[13] was low (50.8%) as compared to our study, whereas other studies reported by Zahrani et al[2] 85%, Shaheed et al[14] 81.3% showed a higher frequency of chronic cholecystitis compared to our study. Maximum number of chronic cholecystitis was seen in the 5th decade with the mean age of presentation of 43.5 years. Shaheed et al[14] reported the mean age of presentation of 39.1 years. Female: male ratio of chronic cholecystitis was 4.4:1.

In the present study, the frequency of chronic calculous cholecystitis was 73.1%, which was comparable to the studies reported by Singh et al[8] 74.0%.The frequency of follicular cholecystitisstudied was 4%. Tyagi et al[13] reported 6.2% cases of follicular cholecystitis.The observed frequency of xanthogranulomatous cholecystitis was 2.7%. Tyagi et al[13]reported 4.1% frequency of xanthogranulomatous cholecystitis which is higher as compared to our study. Xanthogranulomatous cholecystitis showed sheets of foamy histiocytes in the wall. In the present study, xanthogranulomatous cholecystitis was seen in the 7th decade with the mean age of presentation of 61.3 years. The reported female: male ratio of xanthogranulomatous cholecystitis was 3:1, which was comparable to the study reported by Karabulut et al[15](2:1).

The observed frequency of acute cholecystitis by us was 5.3%, which was comparable to the studies done by Tyagi et al[13]as 4.1%. Acute cholecystitis was most commonly seen in the 6th decade with the mean age of presentation of 58.6 years which was comparable to the study reported by Fuks et al[16] as 58.0 years. In the present study, the female: male ratio of acute cholecystitis observed was 1:1which was comparable to the study reported by Fuks et al[16]. Acute cholecystitis showed focal or extensive mucosal ulceration, covered by acute inflammatory exudate. The wall showed diffuse and dense infiltration by polymorphonuclear cells predominantly and mononuclear cells. The serosa showed congested blood vessels, few containing fibrin thrombi and covered with inflammatory exudates.

In the present study, the frequency of acute on chronic cholecystitis was 10% which was comparable to the study reported by Tyagi et al [13] 10.8%. The female: male ratio of acute on chronic cholecystitis observed was 1.5:1. Tyagi et al[13] reported female: male ratio of 10.3:1. This discrepancy may be because of smaller sample size in the present study. Chronic cholecystitis showed diffuse and dense infiltration by mononuclear cells in the wall and serosa. Out of 15 cases of acute on chronic cholecystitis, 9 (60%) cases were associated with gallstones.

We observed frequency of cholesterolosis as 4.6%. The study done by Zahrani et al[2] reported higher frequency as 11.5% whereas Tyagi et al[13] reported 2.7% a lower frequency of cholesterolosis as compared to our study. Maximum cases of cholesterolosis were seen in the 4th decade with the mean age of presentation of 39.3 years. The female: male ratio of cholesterolosis observed in the present study was 2.5:1, which was comparable to the study reported by Tyagi et al[13] as 2.2:1. Cholesterolosis showed collection of foamy histiocytes in the lamina propria.

In the present study, the observed frequency of metaplasia was 18.7%. We observed antral metaplasia in 96.4% cases and intestinal metaplasia in a 3.6% case. Zahrani et al[2]reported 88% cases of antral metaplasia and 12% cases of intestinal metaplasia. Stancuet al[17] reported 83.7% cases of antral metaplasia and 16.3% cases of intestinal metaplasia. All the studies showed more frequency of occurrence of antral metaplasia than intestinal metaplasia.

In the present study, the observed frequency of hyperplasia was 10.7%. Spongioid hyperplasia was seen in 87.5% cases, followed by papillary and adenomyomatous hyperplasia, accounting for 6.25% each. Stancu et al[17] also reported more cases of spongioid hyperplasia (73.3%) than papillary hyperplasia (26.7%). The observed frequency of benign tumors as well as malignant tumors was 0.7%. Lee et al[f54] reported a frequency of benign tumours as 1.8%.

## CONCLUSION:

From our study result we conclude that the lesions of gallbladder were common in the 5th decade with the mean age of presentation of 45.5 years and showed female predominance with female: male ratio of 3.1:1.Cholecystitis (94%) was the most common gallbladder lesion. Among epithelial changes in gallbladder lesions, metaplasia (18.7%) was more common than hyperplasia (10.7%). Antral metaplasia was more common than intestinal metaplasia. Spongioid hyperplasia was more common observed than papillary hyperplasia and adenomyomatous hyperplasia. Malignant tumors constituted 0.7% of all gallbladder lesions.

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