



Original Research Article

Clinicopathological study of calculous cholecystitis

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ABSTRACT

Background: Calculous cholecystitis is the most common lesion of the gallbladder. Pain abdomen is the common clinical presentation. Calculous and acalculous cholecystitis are the most common indications for cholecystectomy. Gross and microscopic examination of the gall bladder indicates the outcome of the lesions. The various histological findings will reveal the type of the disease entity and prognosis.

Materials and Methods: Retrospective study was done, total 120 cases of cholecystectomy specimens were received in pathology department. Formalin fixed specimens were analysed. After processing, H&E stained sections were studied.

Results: Chronic calculous cholecystitis is the most common non-neoplastic lesion. calculous cholecystitis (92 cases), acalculous cholecystitis (21 cases), follicular cholecystitis (4 cases), empyema gallbladder (1 case), xanthogranulomatous cholecystitis (1 case), eosinophilic cholecystitis (1 case). Among premalignant lesions, cholecystitis with metaplasia was seen in 40 (33.3%) cases. Pyloric metaplasia (25 cases), Intestinal metaplasia (15 cases).

Conclusion: Chronic calculous cholecystitis was the most common lesion. Histopathological evaluation plays an important role in identifying the metaplastic, dysplastic and incidental carcinoma of the gallbladder.

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1. Introduction

Among the biliary tract lesions, gallbladder lesions are most common. More than 95% of the gallbladder lesions are of non-neoplastic. Calculous cholecystitis is the most common lesion in women.¹ Gallbladder lesions are very common in fatty, fertile, females of around forty age group.² In India and in western countries, the incidence of cholelithiasis is increasing due to change in lifestyle, food habits and consumption of alcohol.² The gallstone disease prevalence is 6-12% in India and 10-15% in Western population. The disease is more common in women (9.6%) than men (3.1%).² Cholecystectomy is the common surgical procedure for symptomatic gallstone disease and

chronic cholecystitis. The histological examination of the cholecystectomy specimen is very essential to evaluate the disease and to rule out the malignancy.

Chronic inflammation by the gallstones is an important etiological factor in carcinogenesis.³ The incidence of carcinoma associated with gallstones varies from 0.3-12%. Histopathological analysis is mandatory to detect early diagnosis of carcinoma, premalignant lesions such as porcelain gallbladder, degenerative and metaplastic changes-dysplasia and carcinoma in situ changes.⁴ Metaplastic changes are in association with gallstones and chronic thickening of the gallbladder.

Routine gross and microscopic examination of cholecystectomy specimens is carried out both in symptomatic and asymptomatic cases, suspicious features in radiology or intraoperatively.

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The aim of our study was to evaluate the cholecystectomy specimens of calculous cholecystitis.

Selective approach made to analyse the gross findings and microscopy of calculous cholecystitis, to evaluate the histological spectrum of changes like degenerative, dysplastic changes and to rule out malignancy.

2. Materials and Methods

A Retrospective study was done in the department of pathology at santhiram medical college, Nandyal, Kurnool for a period of 2 years i.e. from May 2018 to April 2020. The patients from in and around nandyal, attending to surgical department with clinical diagnosis of cholecystitis were included in the study. In the present study patients admitted with acute or chronic cholecystitis and operated were included. The clinical details were taken from the hospital records and analysed. Cholecystectomy specimens were fixed in 10% formalin. Gross examination of intact and cut opened specimens were carried out by noting the size, external and internal examination, thickness of the walls, mucosal surface, presence of gallstones, number of stones and type of stones. Routinely sections from the neck, body and fundus of the gallbladder were given. An additional section from the suspected areas were also given. After processing, H&E stained sections were examined under light microscope and thorough analysis was done. Histological findings of calculous cholecystitis specimens were noted. Detailed study of degenerative, metaplastic changes and type of histopathological lesions was done. The relevant clinical data regarding the age, sex of the patient, symptoms, ultrasonogram findings and site of biopsy, gross and microscopic findings, all the details were analysed.

2.1. Inclusion criteria

All the cholecystectomy specimens of both calculous and acalculous cholecystitis with metaplastic changes were included.

2.2. Exclusion criteria

Cholecystectomy specimens of carcinoma gallbladder were excluded.

3. Results

During the two year study period, the total number of cholecystectomy specimens received were 120, (out of 120, number of females patients were 86 and 34 were male. 110 Cases presented with pain abdomen. Pain was colicky. The common site was right hypochondrium 83%cases followed by epigastrium 17%.²22 cases presented with nausea, 5 cases with dyspepsia and 6 were with severe pruritus. In most of the cases, 9 cases present with diabetes mellitus and hypertension.12 cases only with diabetes and 8 with

hypertension. In all the patients, the radiological and clinical diagnosis was cholelithiasis.

Among the 120 cases 86 were females and 34 were males with M:F ratio 1:2.5 Females found predominantly affected than males. The common age group affected was 20-70 years in females, 30-50 years in males. The mean age of metaplastic changes was 42-50 years.

Table 1 Out of 120 cases 92 were with calculous cholecystitis, 28 were acalculous cholecystitis. Among 92 cases of calculous cholecystitis 74 were pigment stones, 17 were mixed and 1 was cholesterol stones.

92 cases chronic cholecystitis, in 64 cases grossly gallbladder the wall thickening was more than 3-4mm. In 36 cases oedematous congestion of walls, 20 cases with ulceration and 64 cases diffuse thickening of walls.

On histopathological examination, the most common lesion noted was 92 cases of chronic calculous cholecystitis. The other lesions noted were 4 cases of follicular cholecystitis, one case of eosinophilic cholecystitis, one xanthogranulomatous cholecystitis and one case of empyema gallbladder. Table 6

Among 120, 76.6% cases of chronic cholecystitis, 20 with focal ulceration and collection of lymphocytes and plasma cells in the subepithelial region. Rokitansky Aschoff sinuses noted in 6 cases (21 cases showed acalculous cholecystitis. In the subepithelium, lymphoplasmocytic infiltration noted).

Only one case xanthogranulomatous cholecystitis, the histopathological finding of foamy macrophages, cholesterol clefts, multinucleate giant cells, lymphocytes and plasma cells noted.

In one case of empyema, grossly noted pus in the gallbladder. Histologically marked edema, walls covered with fibrinous exudates with mucosal ulceration, foreign body giant cells, abscess formation and presence of acute and chronic inflammatory cells.

In one case of eosinophilic cholecystitis, histologically abundant eosinophils along with lymphocytes, plasma cells inflammatory infiltrate in the subepithelium.

In four cases of follicular cholecystitis, grossly thickened and smooth walls, cut section showed granular brown pigmented mucosal surface, focal follicular formation of lymphocytic proliferation and increased number of glands noted in the subepithelium.

Total cases of metaplasia were 40(33.3%) of which 25 cases pyloric metaplasia and 15 were intestinal metaplasia. Pyloric metaplasia (degree2) noted in 13 cases.

4. Discussion

In clinical practice, the most common are gallbladder lesions and cholecystectomy is the common surgical procedure.² In the present study, total 120 cases of cholecystectomy were studied in a two year period. The most common lesions noted are chronic calculous

Table 1: Age wise and sex wise incidence of gallbladder lesions

Lesions	11-20		21-30		31-40		41-50		51-60		61-70		71-80		Total
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Calculous	3	0	11	9	32	12	10	6	3	0	4	0	2	0	92
Acalculous	0	0	2	0	6	2	8	0	2	0	0	1	0	0	21
Follicular cholecystitis	0	0	0	0	3	0	0	1	0	0	0	0	0	0	04
Empyema	0	0	0	0	0	1	0	0	0	0	0	0	0	0	01
Xanthogranulomatous	0	0	0	0	0	0	1	0	0	0	0	0	0	0	01
Eosinophilic cholecystitis	0	0	0	0	1	0	0	0	0	0	0	0	0	0	01
Total	3	0	13	9	42	15	19	7	5	0	4	1	2	0	120

Table 2:

Lesions	No of cases	%
Calculous	92	76.6%
Acalculous	28	23.3%

Table 3: Calculous gallbladder

Age wise	10-20		20-30		30-40		40-50		50-60		60-70		70-80		Total	% of cases
	F	M	F	M	F	M	F	M	F	M	F	M	F	M		
Stones																
Pigment	3	0	9	6	28	8	6	6	3	0	4	0	1	0	74	80.4%
Mixed	0	0	2	3	4	4	3	0	0	0	0	0	1	0	17	18.5%
Cholesterol	0	0	0	0	0	0	1	0	0	0	0	0	0	0	01	1%

Table 4: Clinical features

Symptoms	No. of cases	% of cases
Upper Abdominal Pain	110	91.6%
Nausea	22	18.3%
Vomiting	44	36.6%
Mild Jaundice	6	5%
Dyspepsia	5	4.1%
Pruritus	6	5%

Table 5: Gross appearance

External appearance	
Normal	64
Shrunken	28
Cut section-Mucosa	
Granular	72
Ulcerated	20
Wall thickening <4mm	28
>4mm	64
Congestion	36

Table 6: Histopathological findings

Chronic calculous cholecystitis	92	76.6%
Acalculous cholecystitis	21	17.5%
Follicular cholecystitis	04	3.3%
Focal ulceration	20	16.6%
Eosinophilic cholecystitis	01	1.08%
Xanthogranulomatous	01	1.08%
Empyema Gallbladder	01	1.08%
Metaplastic changes	40	33.3%
Rokitansky aschoff sinuses	06	5%

Table 7:

Metaplastic changes	No. of cases (40)	%
Pyloric	25	62.5%
Intestinal	15	37.5%

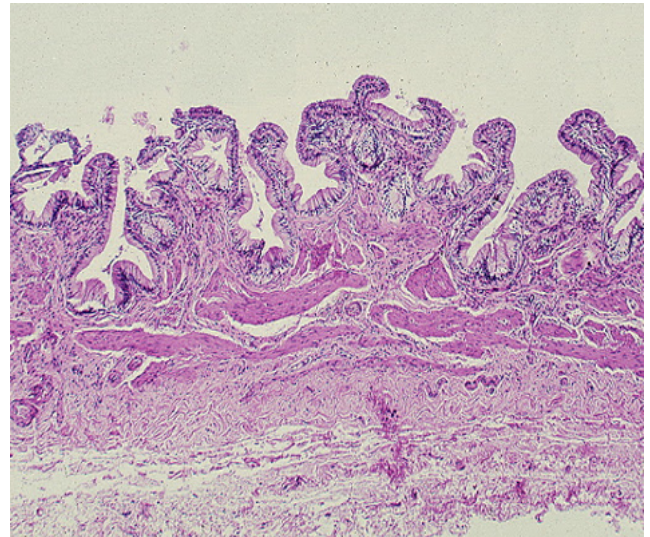
cholecystitis (76.6%) the most common clinical symptoms was pain abdomen 91.6% cases and the site was right hypochondrium and epigastrium.² Similar findings observed by Ezhil Arasi et al and Bansal et al as they noted 55% and 100% of cases, Kumari et al in 99.63% of cases. Hence our study correlated with the above authors. Kumari et al observed nausea/vomiting, fever and jaundice in 27.63%, 8.36% and 2.90% cases. Bansal et al observed in 64.4%, 13.5% and 6.7% cases. Our study correlated with Bansal et al and differed with Kumari et al.

In our study the incidence of non neoplastic lesions were peak in the age range of 31-40 years with female predominance.² Geetha kumari et al and Rakesh BH et al noted in the age group of 41-60 years.³ Our study differed from the above authors study.

**Fig. 1:** Multiple yellow coloured gallstones

In the present study, grossly the thickness of gallbladder was between 1-3mm in 23.3% of cases and >3mm in 53.3% of cases. Our study correlated with the study of Geeta kumari et al, Ezhil Arasi et al and Sumit Giri et al.

The most common lesion noted was calculous cholecystitis 76.6%-89.18% by Geeta kumari et al, 85.4% by Dowrah et al 2016, 97% by Awasthi et al 2015 and 81.17% by N.Sreemani K et al 2016 were documented. Our present study correlated with the above authors study. Mazlum M et al documented that the cholesterol stones were common. The present study differed with Mazlum et al. 51.03% of pigment stones reported by Geeta kumari et al .60% by Rakesh BH et al and 38% by Bansal et al 2014.³

**Fig. 2:** Photomicrograph of Chronic Cholecystitis (H&E,X100)

The present study 80% correlated with the above authors study.

In our study the incidence of non neoplastic lesions were peak in the age group of 31-40 years with female predominance. Geeta kumari et al and Rakesh BH et al noted in the age group of 41-60 years.³ Our study differed from the other authors study. Calculous cholecystitis was the most common lesion where 73.64% reported by Geeta kumari et al, other lesions Chronic cholecystitis without stones- 15.45%, 0.55% of eosinophilic cholecystitis and follicular cholecystitis, 1.64% of xanthogranulomatous cholecystitis reported by Geeta kumari et al. 76.6% of chronic cholecystitis, 1.08% of eosinophilic cholecystitis, 3.3% of follicular cholecystitis and 1.08% of xanthogranulomatous cholecystitis. The present study correlated with the above authors study.

Franco V et al documented xanthogranulomatous cholecystitis common in females of 6th and 7th decade.⁴ Tyagi SP et al documented that the morphological changes are more common in females in the age range of 4th and 5th decade with Associated cholelithiasis in 85.3% of cases.⁵ Our study correlated with the above findings.

Renu Sharma et al 2018 reported metaplasia in 42.5% of pyloric, 16% of intestinal metaplasia.⁶ 16.5% of pyloric and 15.5% of intestinal metaplasia by Khanna et al 2006.⁷ 50% of pyloric and 16% intestinal metaplasia by Martinez-guzman et al.⁸ Highest incidence of 95.1% of pyloric metaplasia and 58.1% of intestinal metaplasia by Duarte

et al 1993.⁹ In the present study 62.5% pyloric and 37.5% intestinal metaplasia.

The mean age of patients with pyloric and intestinal metaplasia was 42.5 & 43 years respectively by Renu Sharma et al 2018. The present study mean age was 42 years. Hence correlated with Renu Sharma et al. Kozuka S et al 1984 documented that intestinal metaplasia increase with age.¹⁰

Pyloric metaplasia noted mainly in fundus (30.3%) body and neck (28.6% and 22.7%) where as it was 9.2%, 0.9% and 7.6% in case of intestinal metaplasia.

Fernandes JE et al 2008 documented that intestinal metaplasia is extremely frequent in gallbladder with inflammation and lithiasis especially in younger patients.¹¹ In our study, intestinal metaplasia noted in younger patients in age group of 35-40 years. Hence the study correlated with Fernandes et al.

5. Conclusion

Female gender is the risk factor for chronic calculous cholecystitis. Histopathological examination is mandatory to emphasise the spectrum of changes. Predominantly pigment stones found in the younger age. The pyloric metaplasia commonly noted in the age range of 40-50 years.

6. Source of Funding

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7. Conflict of Interest

The authors declare that they have no conflict of interest.

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