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Original Research Article

Gall bladder diseases: a study of histopathological spectrum of cholecystectomy specimens from rural tertiary hospital in Telangana state during COVID pandemic

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ABSTRACT

Background: The debate of "is it worth spending the busy pathologist's time on gall bladder specimens" has been there for decades. The selective approach may result in missing discrete pathologies such as premalignant lesions. We are presenting an interesting series of gall bladder histopathology diagnosed at our institute in the past two years.
Methods: This is a retrospective study done at Bhaskar Medical College between 2020-2022 (specifically chosen as this is the period of COVID pandemic). This study included 43 patients who underwent cholecystectomy. All confirmed cases of acute abdomen operated for other reasons and trauma were excluded. Sections were taken from neck, fundus, body and cross section of cystic duct of each cholecystectomy specimen. The whole gallbladder was submitted and screened for the invasion in ICPN case. These sections were processed through routine paraffin embedding, microtome cutting and H&E staining for evaluation of spectrum of various gallbladder lesions.
Results: In our study, 25 cases showed lymphoplasmacytic infiltration with fibrosis, 9 cases showed ulceration, congested blood vessels and neutrophilic infiltration. We encountered few rare cases like eosinophilic cholecystitis, xanthogranulomatous cholecystitis, and Intracholecystic papillary neoplasm (ICPN)". Pyloric metaplasia was seen in 27.9% cases, which is also higher
Conclusions: Our study emphasizes the need for the routine examination of these specimens, to have a detailed understanding of the etiology to prevent/predict the other associated medical conditions. We also could find 2% of the cases having pre-malignant lesions and 28% having metaplasia, which if missed shall progress to malignant conditions.

Key words: Intracholecystic papillary neoplasm, Cholecystectomy, Xanthogranulomatous cholecystitis, Pyloric metaplasia, Routine pathological examination

INTRODUCTION

Cholecystectomy is one of the frequently performed procedures, while gallstone disease is the commonest cause encountered with a prevalence of 2% to 29 (accounts for more than 95% of gall bladder related disease). Routine histopathological examination (HPE) is vital as we may miss rare occasions of malignancy/ premalignant lesions.[1]

The clinical symptoms in most cases remain pain, fever and other non-specific symptoms but gallbladder diseases present with varied histopathological spectrum ranging from acute or chronic inflammation to metaplasia and even malignancies. It is well known that a range of racial, cultural and lifestyle factors impact the pathological spectrum of gall bladder diseases across the globe. Though it is seen more often in the Northern India, the incidence of

the same is on rise now even in southern India due to cultural and food habit shift.[2] The debate of "is it worth spending the busy pathologist's time on gall bladder specimens" is there since decades.[3] The authors argue that "Selective approach for sending cholecystectomy specimens for histopathology results in missing discrete pathologies such as premalignant lesions. To avoid such mishaps, therefore, every cholecystectomy specimen should be routinely examined histologically".[4,5] We thought of presenting an interesting series of gall bladder histopathologies diagnosed at our institute in the past two years. We could identify a rare case of "Intracholecystic papillary neoplasm (ICPN)" among these gall bladder biopsies which emphasizes the need for the routine examination of these specimens.

Aims and objectives

Aim and objective was to identify the histopathological spectrum of diseases affecting the gall bladder in the cholecystectomy specimens studied.

METHODS

This is a retrospective study done at Bhaskar Medical College between 2020-2022 (specifically chosen as this is the period of COVID pandemic). This study included 43 patients who underwent cholecystectomy. All confirmed cases of acute abdomen operated for other reasons and trauma were excluded. Sections were taken from neck, fundus, body and cross section of cystic duct of each cholecystectomy specimen. The whole gallbladder was submitted and screened for the invasion in ICPN case. These sections were processed through routine paraffin embedding, microtome cutting and H&E staining for evaluation of spectrum of various gallbladder lesions. We used MEDCALC version 10.1 for the windows for the statistical analysis.

RESULTS

Of the 43 specimens submitted to the histopathology department, 33 (69.8%) were females and 10 (30.2%) were males (Table 1). The mean age of the patient was 42 years while youngest was 16 years and oldest was 80 years. Out of 43 cholecystectomy specimens 39 (90.7%) had stones as described in (Table 2). The following histological patterns were found (Table 3) in the cholecystectomy specimens. In our study, 25 cases showed lymphoplasmacytic infilitration in mucosa, muscularis propria and serosa along with fibrosis (Figure 1), and 9 cases showed ulceration, congested blood vessels and neutrophilic infiltration. We had one case of eosinophilic cholecystitis which showed inflammatory infiltrate comprised of 90% eosinophilic infiltrate and congested blood vessels (Figure 2). We observed 1 case of xanthogranulomatous cholecystitis which was showing ulceration, lymphoplasmacytic and histiocytic infiltration in thickened wall (Figure 3). We observed pyloric metaplasia (Figure 4) in 12 (27.9%) cases and graded according to extent of metaplasia. Grade 1-occasional pyloric glands. Grade 2-group of pyloric glands. Grade 3-sheets of back-to-back arranged pyloric glands.

Table 1: Sex distribution in cholecystectomy specimens.

Sex	N (%)
Females	33 (69.8)
Males	10 (30.2)

Table 2: Calculous cholecystitis vs. a calculous cholecystitis.

Types of cholecystitis	N	%
Calculous	39	90.7
Acalculous	4	19.3

Table 3: Histological patterns of cholecystectomy specimens.

Histopathological type	N (%)
Acute ulcerative cholecystitis	9 (20.9)
Lymphoplasmacytic cholecystitis	25 (58.1)
Eosinophilic cholecystitis	1 (2.3)
Xanthogranulomatous Cholecystitis	1 (2.3)
Cholesterolosis	3 (6.9)
Pyloric metaplasia	12 (27.9)
ICPN	1 (2.3)
Follicular cholecystitis	1 (2.3)
Rokitansky Aschoff sinuses	3 (6.9)

We have one case of intracholecystic papillary neoplasm which showed papillary structure comprised of pyloric glands arranged back-to-back, trabecular and sheets. Cells showed pleomorhism, high mitotic activity (Figures 5-6).

Table 4: Grading of pyloric metaplasia.

Degree of pyloric metaplasia	N
Grade 1	6
Grade 2	3
Grade 3	3

Table 5: Comparison of Grade of the pyloric metaplasia.

Grades	Our study (%)	Sharma et al (%)
Grade1	13.9	20
Grade 2	6.9	13.4
Grade 3	6.9	9.2

DISCUSSION

The incidence of gallbladder carcinoma is rare in India. It contributes to 9.6% of all cancers in females in northern India (Ganges belt) which is much higher than eastern India (5.8% to 6.0% of all cancers).[6,7] While studies from southern India had very low prevalence 0.52% amongst

men and 0.66% amongst women.[8] Previous Studies showed that almost 80% of individuals with GBC in north India have gallstones. In our study we found gallstones in 90.7%.[2,9]

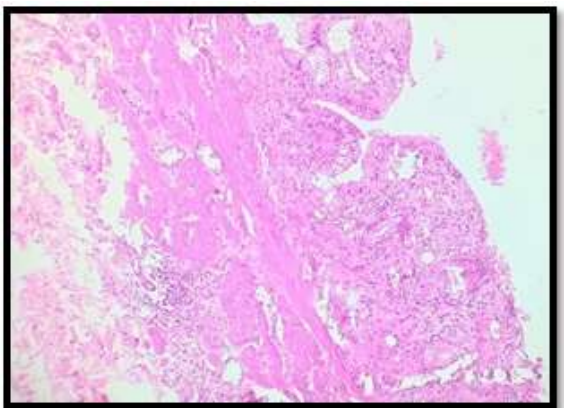

Figure 1: Lymphoplasmacytic infilitration in mucosa, muscularis propria and serosa along with fibrosis.

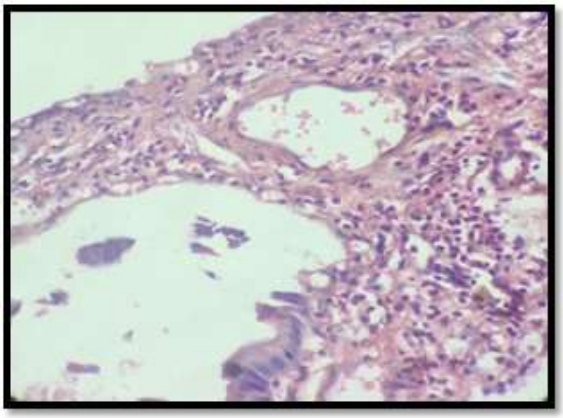

Figure 2: Eosinophilic cholecystitis which showed inflammatory infiltrate comprised of 90% eosinophilic infiltrate and congested blood vessels.

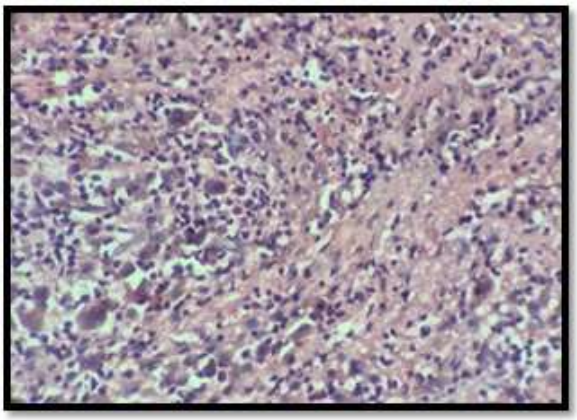

Figure 3: Xanthogranulomatous cholecystitis which was showing ulceration, lymphoplasmacytic and histiocytic infiltration in thickened wall.

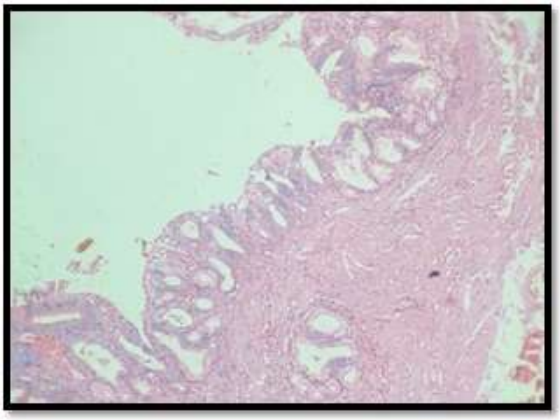

Figure 4: Pyloric metaplasia.

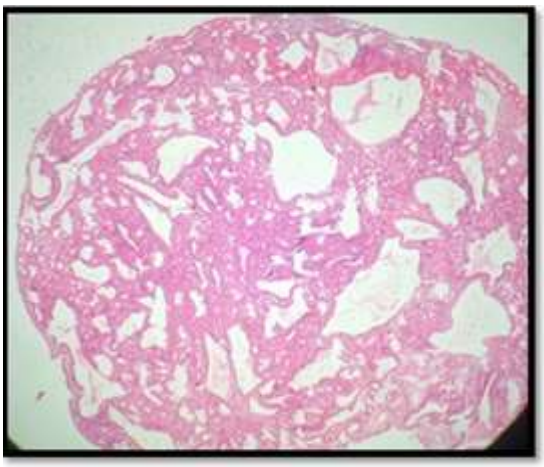

Figure 5: Pleomorhism, high mitotic activity.

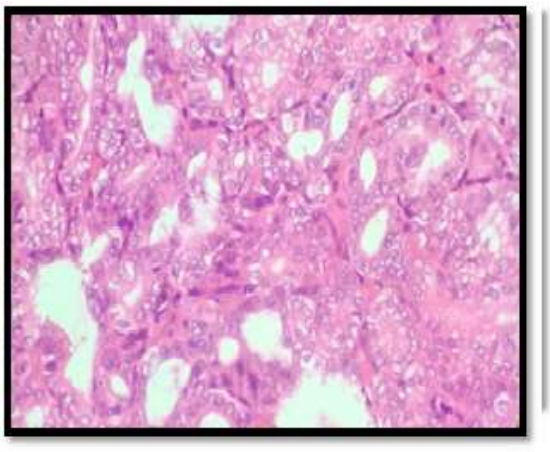

Figure 6: Cell showing pleomorhism, high mitotic activity.

According to 2010 and 2019 WHO classification of tumors of gallbladder, biliary intraepithelial neoplasia (BilIN) and intracholecystic papillary neoplasia (ICPN) are premalignant lesions.[10] Accidental finding of these lesions while doing routine processing of calculous cholecystectomy specimens is alarmingly increasing.[3]

If we understand the pathogenesis of metaplasia, dysplasia and carcinoma sequence chronic inflammation is the major culprit and cholelithiasis is the major cause for cholecystitis. In our study we analyzed different histological variants in chronic cholecystitis. Among all chronic cholecystitis with lymphoplasmacytic infiltration (58%) is the most common presentation. It is in concordance with the published literature.[9] It is followed by acute ulcerative cholecystitis (21%) which shows denudation of mucosa, neutrophilic infiltrate and congested blood vessels. Out of 43 cases only 3 (6%) calculous cholecystectomy specimens showed histological features of cholesterolosis, when compared with 19% according to Faik et al study.[11] According to Pehlivanoglu et al cholesterolosis was found in 32% of ICPN cases and they suggested that nonmucinous intracholecystic tubular tumors such as ICPN may arise from cholesterol polyps.[12]

Eosinophilic cholecystitis is a rare entity, and it might present as a single entity or can be associated with eosinophilic gastroenteritis and systemic disease. Whereas, in our case patient had peripheral blood eosinophilia, in Sabina Khan et al study 2 out 22 showed peripheral eosinophilia. We came across one case of follicular cholecystistis in our study with dense lymphocytic infiltration and follicle formation.[13] A specimen of Xanthogranulomatous cholecystitis showed wall thickness of 2.5 cm and was clinically and radiologically diagnosed as carcinoma of gallbladder. On histopathological examination the wall was infiltrated with lymphocytes, hemosiderin and lipid laden macrophages, giant cells. Such cases which can mimic gall bladder carcinoma can be diagnosed only after histopathological examination.

Pyloric metaplasia and intestinal metaplasias are frequently observed in chronic calculous cholecystitis patients. In our study we found only pyloric metaplasia in 12 (27.9%) specimens whereas in a study by Renu Sharma et al 46.2% of gall bladder biopsies showed pyloric metaplasia and intestinal metaplasia was found in 15.97% cases. As most of the chronic cholecystitis shows metaplasia which is thought of starting point in metaplasia-dysplasia-carcinoma insitu sequence. We tried to grade the degree of metaplasia depending on the extent of metaplasia (Table 5).[14] Intracholecystic papillary neoplasm is a premalignant lesion and in recent times this is gaining the attention of all histopathologists and clinicians. It is one of the frequently studied topics of gallbladder. In our case it has presented as a 1 cm polyp which was identified on ultrasonography. Daisuke et al observed a sessile polyp in ultrasonography and in their follow-up of 2 yrs they saw its rapid transformation into polypoid growth.[12] On histopathology they confirmed it as ICPN gastric type. Our case of ICPN was also labelled as gastric type, as histologically it showed back-to-back arrangement of pyloric type gastric glands which showed hyperchromasia, pleomorphism and 1-2 mitotic figures/HPF. The whole gallbladder was submitted for foci of invasion and reported as negative after thorough study.[12]

Limitations

Limitations of current study were; small sample size, Retrospective nature of the study and relatively large number of rare cases.

CONCLUSION

The calculous cholecystitis is the most common disease of the gall bladder especially in females. In our study, our data revealed the importance of routine histopathological examination which helps in ruling out of carcinoma mimics, establishing the metaplasia-dysplasia-carcinoma sequence and identifying and studying the pathogenesis of biliary intraepithelial neoplasia (BilIN) and intracholecystic papillary neoplasia (ICPN).

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Ethical approval: The study was approved by the Institutional Ethics Committee

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