



Histomorphological Spectrum of Cholecystectomy Specimen and Incidence of Unexpected Primary Carcinoma Gall Bladder- Review of Cholecystectomy Specimens from A North Indian Hospital

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ABSTRACT

Background: Cholecystectomy is one of the most commonly performed surgery in the world. Cholelithiasis is the most common indication for elective cholecystectomy. The incidence of Unexpected primary carcinoma gall bladder varies from 0.23 to 1.9%.

Method: Histomorphological spectrum in 367 cholecystectomy spectrum was studied retrospectively.

Results: There was a preponderance of females, with male to female ratio of 1: 2.4. The mean age of the cases was 49.9 years. Most of the cases were in 4th and 5th decades of life. Chronic cholecystitis was the most common histological findings seen in 91% cases. Associated cholelithiasis was present in 219/367 cases. Other lesions observed were acute cholecystitis (3.8%), acute on chronic cholecystitis (1%), adenomyomatosis (0.5%) follicular cholecystitis (0.5%) and xanthogranulomatous cholecystitis (0.5%). Dysplasia was seen in 0.3% cases. Eleven cases of adenocarcinoma were notices, two including Unexpected primary gall bladder carcinoma.

Conclusion: Cholecystectomy specimens show varied histomorphological spectrum. Gross examination of the specimen does not rule out underlying premalignant or malignant condition. A keen histopathological examination of all cholecystectomy specimens must be done.

Keywords: Cholecystitis, Cholelithiasis, Unexpected Primary Gall bladder carcinoma, histomorphology

Introduction

Cholecystectomy is one of the most commonly performed surgeries all over the world. The indications for cholecystectomy range from benign to neoplastic including acute cholecystitis, chronic cholecystitis, adenomyomatosis, cholesterosis, metaplasia, dysplasia and frank carcinomas.

Cholelithiasis is the most common indication for elective cholecystectomy. The prevalence of cholecystectomy performed due to cholelithiasis varies from 2-29% in north India [1,2]

UPGC (Unexpected primary carcinoma gall bladder)/ Incidental carcinoma is defined as a cancer that is diagnosed using histology only after removal of the gall bladder with a presumed diagnosis of benign disease. Incidental carcinoma has been reported varying from 0.23- 1.9 % of cholecystectomies done for cholelithiasis by various authors [3-6]

The aim of current study was to assess histomorphological spectrum of all cholecystectomy specimens received over a period of 15 months and to evaluate the risk of incidental ca GB in the population of north India.

Material and Method

It was a retrospective study of all cholecystectomy specimens received in department of histopathology over a period of 15 months from Jan 2018 to April 2019.

All cholecystectomy specimens were included in the study irrespective of the preoperative diagnosis. Both open and laparoscopic cholecystectomy specimens were included in the present study.

Hospital records were reviewed for all the patients undergoing cholecystectomy. A routine USG and blood investigations were performed. All cholecystectomy specimens were routinely sent for histopathological examination.

Data was analysed using SPSS 20.0 version. Statistical analysis was performed using analysis of variance for averages and chi square test for contingency tables and proportions.

Results

Among the 367 cases of cholecystectomy, 108 (29.4%) were males and 259 (70.6%) were females. The M: F ratio was 1:2.4. Majority of the cases were residents of Punjab,

with few cases from Uttarakhand, Himachal Pradesh and Haryana. The mean age was 52.9 in males (range 5-79 years) and 48.3 in females (range 1-84). 4th and 5th decade were the most common age group. Cholelithiasis was reported in 225/ 367 cases (91.2%), thus pointing it to be the most common risk factor for cholecystitis (Table 1).

The most common presentation was pain abdomen (355/367) followed by nausea and vomiting (195/367). Among the carcinoma patients lump abdomen, jaundice were the most common presenting features. Nine cases had locally advanced stage of the carcinoma and one showed distant metastasis at the time of presentation (Table 2).

Among the 367 cases 352 went laparoscopic cholecystectomy and 15 had open cholecystectomy, comprising simple cholecystectomy in 5 cases, extended cholecystectomy in 2 cases and radical cholecystectomy in 8 cases. All cases of adenocarcinoma underwent extended/ radical cholecystectomy except two which were incidental carcinomas. In these two patients one underwent simple cholecystectomy as the tumour was limited to mucosa

only. The other underwent extended cholecystectomy at follow up.

Most common histopathology reported was chronic cholecystitis accounting for 91% of the cases (334/367). Among these cholelithiasis was seen in 219 cases. Cholesterosis was second most common associated finding noticed in 32 cases (8.7%). Metaplasia was also seen in 32/367 cases (8.7%) (Table 3). One case of chronic cholecystitis showed dysplasia. Acute cholecystitis was seen in 14/367 cases. Four cases were reported as acute on chronic cholecystitis. Two cases of adenomyomatous hyperplasia, 2 cases of follicular cholecystitis, 2 cases of xanthogranulomatous cholecystitis and one case of mucocele was also seen. Reactive atypia was noticed in 4/367 cases. The final histopathology report as adenocarcinoma was given in 11 cases. Nine out of these 11 cases had a preoperative diagnosis of carcinoma gall bladder. Two cases had presumptive diagnosis of chronic cholecystitis which was reported as adenocarcinoma after histopathological examination (Table 1).

Table 1: Histomorphological diagnosis and Demographic details of study population.

Histopathological lesion	No. Of cases n (%)
Acute cholecystitis	14 (3.8%)
Chronic cholecystitis	334(91%)
Follicular cholecystitis	02(0.5%)
Xanthogranulomatous cholecystitis	02(0.5%)
Mucocele	1(0.3%)
Adenomyomatosis	2(0.5%)
Dysplasia	1(0.3%)
Adenocarcinoma	11(3.1%)

Table 2 Symptoms frequency at presentation.

Symptoms	Frequency	Percentage
Pain	355	96.7
Nausea & Vomiting	195	53.1
Weight loss	2	0.5
Lump abdomen	1	0.25
Fever	13	3.5
Jaundice	5	1.36

Table 3: Histomorphological spectrum of gall bladder lesions associated with metaplasia.

Histopathological lesion	No. Of cases	Metaplasia (%)	Female : male
Chronic cholecystitis	31/334	9.22	1:2.9
Cholesterosis	7/32	2.2	1:2.5
Adenocarcinoma	1/11	9.0	1:0

Discussion

Cholecystitis is inflammation of gall bladder, occurring most commonly due to obstruction of cystic ducts by gall stones. [7] Cholecystectomy is one of the most commonly performed surgeries all over the world. The indications for cholecystectomy include acute cholecystitis, chronic cholecystitis, adenomyomatosis, cholesterosis, metaplasia, dysplasia and frank carcinomas.

Cholelithiasis is the most common indication for elective cholecystectomy. The prevalence of cholecystectomy performed due to cholelithiasis varies from 2-29% in north India [1,2]

Cholecystectomy due to cholelithiasis was performed in 219/367 cases in present study (59.6%). Kaffle et al studied histomorphological changes of gall bladder in 50 cholecystectomy specimens. There was a preponderance of females (M: F = 1:7.6). The mean age of diagnosis was 34.74 years. Most of the cases were seen in 3rd decade of life. [8] Singh A et al studied 100 cases of cholecystectomy for cholecystitis in Punjab and reported mean age of 44.1 years and M: F ratio of 1: 5. [9] In the present study age of the patients ranged from 1 to 84. Maximum cases were seen in 4th decade followed by 5th decade. The mean age was 49.9 years and male to female ratio was 1:2.4 which is similar to as noticed by other authors. [10]

Cholelithiasis results in various changes in gall bladder wall, namely acute cholecystitis, chronic cholecystitis, cholesterosis, granulomatous inflammation and hyperplasia. [11] Injury to the mucosa of gall bladder also leads to changes like metaplasia, dysplasia and carcinoma. [12] Chronic cholecystitis shows various histomorphological spectrum like follicular cholecystitis, xanthogranulomatous cholecystitis, acute on chronic cholecystitis.

In the present study the maximum cases were of chronic cholecystitis (91%) followed by acute cholecystitis (3.8%) and carcinoma (3.1%). These findings were similar to as reported by Sood S et al and Selvi et al. [13, 14]. However percentages varying from 45 to 64.9 % has been reported by various authors. [15-17]

After chronic cholecystitis, acute cholecystitis cases were most common accounting for 3.8% cases, which was in concordance with studies conducted by Sood S et al who reported it as 3.26 %. [13] Other studies show the prevalence ranging from 1.5 % to 18.3 %. [18-20]

Cholesterosis was noticed in 32/367 cases (8.7%). This is higher as obtained by other authors, as reported as 1.69% (24/1420 cases) by Sood S et al (13) and 1.8% by Vahini et al. [19] Terada et al. [20] showed cholesterosis in 3% (16/540) cases. Kaur et al reported a much higher percentage of cases

of cholesterosis (12.25%). This is likely due to different dietary habits and different religions. Adenomyomatosis was found in 2/367 cases (0.5%). [18] Sood S et al reported adenomyomatosis in 1.06% (15/1420) cases. [13] The reason for this variation is different sample size and geographical locations.

In present study, 0.5% (2/367) cases of xanthogranulomatous cholecystitis were found. The results are similar to as obtained by Sood et al, who reported it as 0.35%. [13] In this study, 0.3% cases (1/367 cases) showed dysplastic changes which is in concordance with the study conducted by Sood S et al who observed dysplastic changes in 0.35 % cases and Costa et al [13,17] who observed 0.2% cases of dysplasia out of 727 cases.

In present study, chronic cholecystitis was mostly associated with cholelithiasis (219/ 334) cases. Similar findings were noted by Sood S et al, Mathur SK et al, Mohan H et al and Baig et al. [13, 15, 18, 21] Maximum cases were associated with multiple stones.

Gall bladder carcinoma is the most common malignancy of biliary system and the incidence is highest in northern and central India. In present study, the incidence of carcinoma gall bladder was 3.1% (11/367). Study conducted by Mohan H et al reported the incidence of only 1.09 %. Different studies have reported different incidence varying from 1 to 4%. [12, 22] The variation in results is most likely due to different sample sizes.

UPGC (Unexpected primary carcinoma gall bladder)/ Incidental carcinoma is defined as a cancer that is diagnosed using histology only after removal of the gall bladder with a presumed diagnosis of benign disease. UPGC as seen in 2/367 cases in present study (0.5%). Sangwan MS et al reported the incidence of incidental ca GB as 1.9% [6] Basak F et al reported the incidence as 0.25%. [3] Other authors report incidence of UPGC ranging from 0.3- 1.5 % of cholecystectomies done for cholelithiasis. [4, 5]

Majority of the cases of carcinoma gall bladder are suspected either by ultrasonography or gross examination of the resected specimen. Various studies argue to the role of histopathological examination of cholecystectomy specimen which show normal gross examination. [23-25] In present study 0.5% of the cholecystectomy specimen with presumptive diagnosis of benign pathology showed carcinoma gall bladder on histopathological examination. One of the cases had the tumour limited to the mucosa while the other showed muscular invasion. Due to such incidental gall bladder carcinomas, we advocate mandatory histopathological examination of all cholecystectomy specimens irrespective of the presumptive diagnosis.

Conclusion

Cholecystectomy specimens show variegated histomorphological findings, with chronic cholecystitis with cholelithiasis being the most common. A gross absence of remarkable features does not exclude the presence of underlying premalignant or malignant condition. Hence, we advocate a mandatory histopathological examination of all cholecystectomy specimens with a keen eye of morphological findings of metaplasia, dysplasia and incidental carcinoma.

Abbreviations & Symbols

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Competing interests

None declared

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