



A PROSPECTIVE OBSERVATIONAL STUDY OF CLINICAL AND HISTOPATHOLOGICAL SPECTRUM IN GALLSTONE DISEASE IN WESTERN INDIA

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ABSTRACT

Background: Gallstone disease is a major health problem in general population. We aimed to study the clinical and histopathological spectrum of gallstone disease in Western India.

Methods: Total of 120 cases of gallstone disease who underwent laparoscopic or open cholecystectomy were studied at tertiary care hospital in period of Nov 2016 to May 2018.

Results: Gallstone disease was more common in females compared to males. Right upper quadrant pain (80.8%) was the most common symptom and biliary colic (88.3%) was the most common clinical spectrum. On histopathological evaluation, chronic cholecystitis was seen in 89.2% and carcinoma gallbladder was incidentally detected in 0.8% of cases.

Conclusion: Biliary colic is the most common clinical spectrum and chronic cholecystitis is the most common histopathological spectrum in gallstone disease. Routine histopathological evaluation is pertinent to detect incidental carcinoma of gallbladder.

KEYWORD

Histopathological Spectrum, Carcinoma Gallbladder, Cholecystectomy

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INTRODUCTION

Gallstone disease is one of the major causes for hospital visit worldwide. The prevalence of gallstone is estimated to be 4% in India. It is found to be more common in North Indians compared to South Indians(1).

The risk factors that are identified for the development of gallstones are age, gender, race, obesity, diabetes, and parity (2). Majority of patients remain asymptomatic with only 20% presenting with symptoms of gallstone disease. Most of them present with pain abdomen. Fever and jaundice with itching is seen in complicated cases.

There is not much data regarding gallstone disease in Western belt of India. This prospective observational study was undertaken with the aim to study the clinical and histopathological spectrum in gallstone disease in this region.

MATERIALS AND METHODS

Methodology

The study was initiated after obtaining permission from the institutional ethical committee of a tertiary care hospital. This observational study was done between Nov 2016 to May 2018. The sample size was 120 and inclusion criteria was all patients of gallstone disease undergoing laparoscopic/open cholecystectomy. All relevant informant pertaining to study was recorded in structured format in case record form.

Statistical Analysis

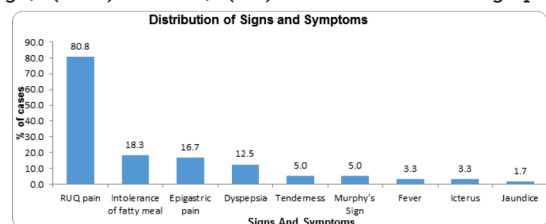
The data on categorical variables is shown as n (% of cases) and the data on continuous variables was presented as Mean and Standard deviation (SD). The statistical significance of difference in the distribution of various categorical variables was tested using Chi-square test Or Fisher's exact probability test for 2 x 2 contingency table.

In the entire study, the p-values less than 0.05 was considered to be statistically significant. All the hypotheses were formulated using two tailed alternatives against each null hypothesis (hypothesis of no difference). The entire data was statistically analyzed using Statistical Package for Social Sciences (SPSS ver 21.0, IBM Corporation, USA) for MS Windows.

RESULTS AND OBSERVATION

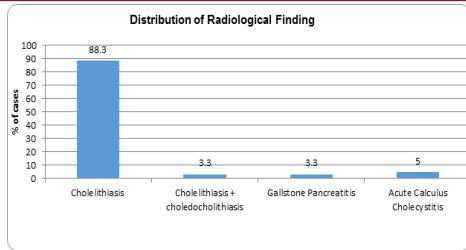
The mean \pm SD of age for gallstone was 42.0 ± 14.8 years and the range was 16 – 80 years. Out of 120 cases, 36 (30.0%) were males and 84 (70.0%) were females, female to male sex ratio was 1:2.33. The mean \pm SD of BMI was 24.6 ± 5.1 kg/m².

When considering the clinical presentations, 97 (80.8%) had right upper quadrant pain, 22 (18.3%) had intolerance of fatty meal, 20 (16.7%) had epigastric pain, 15 (12.5%) had dyspepsia, 6 (5.0%) had tenderness, 6 (5.0%) had Murphy's sign, 4 (3.3%) had fever, 6 (5%) had icterus as shown in graph 1.



Graph 1

On radiological evaluation, 106 (88.3%) had cholelithiasis only, 4 (3.3%) had cholelithiasis with choledocholithiasis, 4 (3.3%) had gallstone pancreatitis, 6 (5.0%) had acute calculus cholecystitis as shown in graph 2. There was no case of gallbladder mass or polyp.



Graph 2

The most common histopathological finding was chronic cholecystitis which was seen in 96 (80.0%) cases. The other variants of cholecystitis included the follicular cholecystitis seen in 3 (2.5%) cases, chronic atrophic cholecystitis seen in 5 (4.2%) cases, chronic cholecystitis with intestinal metaplasia seen in 5 (4.2%) cases, chronic cholecystitis with mild dysplasia seen on 1 (0.8%) case and xanthogranulomatous cholecystitis seen in 3 (2.5%) cases. Similarly, cholesterosis was seen in 3 (2.5%), adenomyomatous hyperplasia in 3 (2.5%) and there was a single case of incidentally detected carcinoma of gallbladder (0.8%) as shown in table 1.

Distribution of Clinical Spectrum According to Histological Spectrum

Table 2

Histological Spectrum	Clinical Spectrum										P-value
	Biliary colic		Cholelithiasis + choledocholithiasis		Gallstone Pancreatitis		Acute Calculus Cholecystitis		Total		
	n	%	n	%	n	%	n	%	n	%	
Chronic cholecystitis	87	90	1	1.0	4	4.2	4	4.2	96	100.0	0.082 ^{NS}
Follicular cholecystitis	2	66.7	1	33.3	0	0.0	0	0.0	3	100.0	0.120 ^{NS}
Chronic atrophic cholecystitis	5	100.0	0	0.0	0	0.0	0	0.0	5	100.0	0.980 ^{NS}
Chronic Cholecystitis with intestinal metaplasia	3	60.0	1	20.0	0	0.0	1	20.0	5	100.0	0.195 ^{NS}
Chronic Cholecystitis with mild dysplasia	1	100.0	0	0.0	0	0.0	0	0.0	1	100.0	0.999 ^{NS}
Xanthogranulomatous cholecystitis	2	66.7	0	0.0	0	0.0	1	33.3	3	100.0	0.378 ^{NS}
Cholesterosis	3	100.0	0	0.0	0	0.0	0	0.0	3	100.0	0.994 ^{NS}
Chronic cholecystitis with adenomyomatous hyperplasia	3	100.0	0	0.0	0	0.0	0	0.0	3	100.0	0.994 ^{NS}
Incidental Ca GB	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0	0.999 ^{NS}

DISCUSSION

Gallstone disease is a common problem of hepatobiliary system. In India, the prevalence of gallstone ranges between 2% to 29% and it is showing increasing trends in recent years (3). Gallstone disease can have various clinical and histological spectrum. There is lack of data regarding gallstone disease in Western part of India. So, we aimed to study the clinical and histological profile of gallstone disease in Western India.

In our study, gallstone was found to be prevalent in a wide range of age from 16 to 80 years. The mean age for gallstone disease was found to be 42±14.8 years and maximum cases were found in 30-39 years age group. Similar finding was seen in study done by Shah et al and Khan et al (4, 5). In a study by Shah et al, age at presentation of gallstone disease was 43.3±13.7. Maximum number of patients was between 31 and 40 years (30.1%) (4).

Similarly, in a study by Khan et al, the age of the patients ranged from 14 to 70 years. Mean age of the patients was 37 years. Maximum number of patients was between 31 and 40 years (30.2%) (5). Selvi et al found mean age to be 45.90 years and most common in age range of 41 to 50 years (6). In a study by Siddiqui et al, maximum number of cases were seen in 31-40 age group and the age ranged from 19 to 80 years. Mean age of presentation was 32.3±5.3 which is slightly at younger age compared to our study (7).

Table 1

SN	Histopathology	Total cases	%
1	Chronic cholecystitis	96	80
2	Follicular cholecystitis seen in 3 (2.5%)	3	2.5
3	Chronic atrophic cholecystitis	5	4.2
4	Chronic cholecystitis with intestinal metaplasia	5	4.2
5	Chronic cholecystitis with mild dysplasia	1	0.8
6	Xanthogranulomatous cholecystitis	3	2.5
7	Cholesterosis	3	2.5
8	Adenomyomatous hyperplasia	3	2.5
9	Carcinoma gallbladder (incidentally detected)	1	0.8

During statistical analysis, out of 96 cases with chronic cholecystitis on histological examination, 87 (90%) had biliary colic, 1 (1.0%) had cholelithiasis with choledocholithiasis, 4 (4.2%) had gallstone pancreatitis and 4 (4.2%) had acute calculus cholecystitis. The distribution of various clinical presentation did not differ significantly between the cases with and without chronic cholecystitis on histological examination (P-value>0.05) as depicted in table 2.

In this study, 70% of cases were females with male to female ratio is 1:2.33. Similar finding of male to female ratio (1:2.7) was found in a study done by Shah et al (4). However, Selvi et al had found male to female ratio 1:1.6, Khan et al found 1:4.7 and Siddiqui et al found it to be 1:7 which is highest among similar studies (5-7).

In our study, upper abdominal pain was the most common symptom in which 80.8% had pain localized at right upper quadrant and 16.7% had pain located at epigastric region. Other common symptoms were intolerance to fatty meal, dyspepsia and jaundice. Selvi et al and Khan et al also reported pain abdomen as most common symptom of gallstone disease (5, 6).

In our study, 72.5% of patients had normal BMI, 20.8% were overweight and 5% of them had class I obesity. The mean ± SD of BMI of cases studied in the entire study group was 24.6 ± 5.1 kg/m². Similar finding of normal mean BMI was seen in a study done by Kharga et al where they had found 23.55 kg/m² (8). However, most of the studies have found higher BMI as one of the risk factors for gallstone disease (9). At least 25% of morbidly obese individuals have evidence of gallstone disease (10). This study shows that people with normal BMI are also susceptible for gallstone formation.

Considering the clinical spectrum, in our study biliary colic was seen in 88.3% of cases, cholelithiasis with choledocholithiasis in 3.3%, gallstone pancreatitis in 3.3% and acute

calculus cholecystitis in 5% of cases. In our study, none of the patient had acute cholangitis or suspected carcinoma of gallbladder clinically. Our study is comparable with a study by Siddiqui et al, where they reported biliary colic in 91.3% of cases. Similarly, biliary colic was seen in 71.1% cases in study of Bansal et al, Selvi et al in 66% and Sharma et al in 65.2% of cases (3, 6, 11). However, Glasgow et al reported biliary colic in only 56% cases, acute cholecystitis in 36%, gallstone pancreatitis in 4%, choledocholithiasis in 3%, carcinoma in 0.3% and acute cholangitis in 0.2% cases (12).

During our histological evaluation, chronic cholecystitis was seen in 80% of cases. Follicular variant was seen in 2.5%, atrophic cholecystitis in 4.2%, intestinal metaplasia in 4.2%, dysplasia in 0.8% and xanthogranulomatous cholecystitis in 2.5% of cases. Overall, chronic cholecystitis along with its variants were seen in 89.2%. Similarly, cholesterosis was seen in 2.5%, adenomyomatous hyperplasia in 2.5% and carcinoma of gallbladder was detected in a single patient (0.8% of cases).

In our study, chronic cholecystitis was the most common histological spectrum. Similar findings were reported by several other studies. Singh et al had reported chronic cholecystitis in 98.3% of cases, Siddiqui et al in 92.2%, Fazal et al in 89.8%, Wrenn et al in 89%, Selvi et al in 85.8%, Mondal et al in 79.8%, Memon in 64.8% and Nayak et al in 62.8% of cases (6, 7, 13-18).

Siddiqui et al reported acute cholecystitis with mucocele in 3.1%, acute cholecystitis with empyema 1.36%, Selvi et al in 2.5%, Fazal et al in 1% and Mondal et al in 6.1% of cases (6, 7, 14, 16). In our study there was not a single histological finding of acute cholecystitis. It could be due to the institutional protocol of interval cholecystectomy after conservative management in acute stage of cholecystitis.

Fazal et al reported cholesterosis in 6.5% Mondal et al in 2.9% and Nayak et al in 14.2% cases, all of which are slightly higher than our study where it was 2.5% (14, 16, 17).

Fazal et al found xanthogranulomatous cholecystitis in 2.2% and Mondal et al 1.7% both of which are comparable to our study (14, 16). Our finding of metaplasia is comparable with study done by Mondal et al which was seen in 4.7% of cases (16).

We found adenomyomatous hyperplasia in 2.5% cases which was higher than that reported by Fazal et al which was seen in 0.3% of cases (14). Mondal et al reported dysplasia in 2.2% of cases which is slightly higher than our study (16).

There was a single case of incidentally detected carcinoma of gallbladder (0.8%) in our study. She was a 64 year old female with clinical diagnosis of cholelithiasis with choledocholithiasis. It was pT1 stage and lap cholecystectomy offered a complete cure. Follow up ultrasound showed no evidence of recurrence. Wrenn et al reported incidental gallbladder carcinoma in 0.25%, Tantia et al in 0.59%, Singh et al in 0.62%, Samad in 1.1%, Selvi et al in 1.2%, Nayak et al in 1.4% and Siddiqui et al in 2.72% of patients undergoing cholecystectomy for gallstone disease (6, 7, 13, 15, 17, 19, 20). Our finding of incidence of incidentally detected carcinoma of gallbladder is within the accepted incidence of 0.35% to 2% (13).

SUMMARY AND CONCLUSION

Gallstone disease is common disorder of hepatobiliary system. The incidence of gallstone increases with age. It is commonly seen in middle age and elderly population and more common in females compared to males. Even patients with normal BMI are susceptible for formation of gallstones.

Pain in upper abdomen, predominantly in right upper

quadrant is the most common presentation of the patient. Biliary colic is the most common clinical spectrum in gallstone disease.

Chronic cholecystitis is the most common histological findings followed by adenomyomatous hyperplasia, cholesterosis, metaplasia, dysplasia and incidentally detected carcinoma of gallbladder in patients with gallstone disease. As gallstone disease is one of the risk factors for carcinoma of gallbladder, all gallbladders need to be evaluated histologically for suspicion of incidentally detected carcinoma of gallbladder.

Conflict of Interest

The authors declare that they have no conflict of interests.

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