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Chronic calculus cholecystitis: A prospective clinico-pathological study with lab based evidence

Janani R G[1], Gyanendra Swaroop Mittal[2,*], Manisha Goel[3]

[1]*Dept. of General Surgery, Santosh Medical College & Hospital, Ghaziabad, Uttar Pradesh, India*
[2]*Dept. of General Surgery, Rama Medical College, Hospital & Research Centre, Hapur, Uttar Pradesh, India*
[3]*Dept. of Obstetrics and Gynaecology, Rama Medical College, Hospital & Research Centre, Hapur, Uttar Pradesh, India*

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ABSTRACT

Background: Chronic calculous cholecystitis is an inflammatory disease which affects the gallbladder wall and causes dysfunction of the biliary system. It is the most common benign disease of the gall bladder.
Aim: To study the pattern of age and sex distribution, diet and clinical feature of patients, the laboratory and radiological investigations of patients presenting with the associated pathology, the intraoperative pathological changes of the gall bladder.
Materials and Methods: This study was conducted from July 2021 to June 2022 at Department of General Surgery, Santosh Medical College and Hospital, Ghaziabad. 100 patients were included in this study. The age, gender, symptomatology, laboratory and radiological findings, intraoperative findings, and histopathological changes where analysed and documented.
Result: In our study maximum patients were found in 31-40 years of age. It was found to be most common in females, who consumed mixed diet. The most common symptom was abdominal pain. In ultrasound whole abdomen gall bladder wall thickness was found in majority of the patients. 98% of the patient underwent laparoscopic cholecystectomy and intraoperatively gall bladder was found contracted in 51% of patients. On histopathological examination mild degree of inflammation was seen in 60%, gall bladder wall thickness seen in 50% and the most common type of gall stone was found to be mixed type in 58% patients.
Conclusion: We observed the intraoperative pathological changes of the gall bladder, radiological investigations of patients, laboratory investigations of patients and the pattern of age and sex distribution, diet, and clinical feature of patients.

1. Introduction

Cholecystitis is defined as a chemical or bacterial inflammation of the gallbladder and is one of the commonest biliary pathologies.[1] The aetiology of cholecystitis is multifactorial. Stasis of bile within the gallbladder with consequent maintenance of contact between stagnant bile and the gallbladder wall resulting in chemical irritation is considered as one of the causes of cholecystitis. A bacterial cause of cholecystitis had been proposed with positive bile cultures seen in as many as 35-40 % of cases. There are several risk factors for the development of calculous cholecystitis such as female gender, obesity, dietary factors. The incidence of disease varies in different parts of the world, and in India, the female to male ratio is 4.4:1. Biliary Chronic calculous cholecystitis is an inflammatory disease which affects the gallbladder wall and causes dysfunction of the biliary system colic is the most common symptom of cholelithiasis. The surgical management is

* *Corresponding author*.
E-mail address: g20mittal@gmail.com (G. S. Mittal).

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elective cholecystectomy.

The aim of the study is to assess the socio-demographic and clinical profile of chronic calculus cholecystitis on the basis of various parameters such as age, sex distribution, socio-economic status, diet, clinical features, laboratory and radiological investigations and histopathological changes.

2. Materials and Methods

A prospective observational study was conducted in the department of general surgery, Santosh Medical College and Hospitals, Ghaziabad from July 2021 to June 2022. This study included 100 patients, age between 18-75 years presenting with complaints of upper abdominal pain. Patients below 18 years and above 75 years, terminally ill, having bleeding disorders, pregnant and patients with malignancy were excluded from the study. Necessary laboratory investigations such as complete blood count, liver function test, renal function test, and ultrasound whole abdomen. After obtaining consent and anaesthetic fitness, patients underwent laparoscopic/open cholecystectomy. Post-operatively the specimen was sent for histo-pathological analysis and gall stones for chemical analysis. All the data was collected and entered in Microsoft excel sheet. Statistical analysis was done using SPSS (Statistical Package for the social sciences), and P value <0.05 is considered statistically significant.

3. Result

In our study the age group of 100 patient's where assessed and maximum number of patients to the age group of 31-40 years were 38 patients. The mean age was found to be 40.36 years. P value was found to be 0.04 (Table 1).

Table 1: Age distribution

Age In Years	Frequency
≤30	22
31 - 40	38
41 - 50	23
51 - 60	8
≥61	9
Total	100

The gender distribution of all the 100 patients is assessed and 78 patients were found to be female and 22 patients were found to be males. P value was found to be <0.001. In our study 86 patients were found to consume mixed diet and 14 patients were found to consume vegetarian diet, with a p value of <0.001.

The most common symptom was found to be abdominal pain which was seen in 73 patients, with a p value of <0.001, fever was seen in 7 patients, nausea and vomiting was seen in 21 patients with a p value of <0.001, dyspepsia was present in 62 patients p value 0.05. (Table 2)

Table 2: Symptoms

Symptom	Frequency
Abdominal pain	73
Fever	7
Nausea and vomiting	21
Dyspepsia	62

On examination abdominal tenderness was seen in 71 patients, with a p value of <0.001, and palpable mass was present in 6 patients. All the patients underwent ultrasound whole abdomen and it was found that in 86 patients gall bladder wall thickness was seen, with a p value of <0.001. The average gall bladder wall thickness was found to be 3.76 mm.

98 patients underwent laparoscopic cholecystectomy and 2 patients underwent open cholecystectomy. Intraoperatively it was observed that gall bladder was contracted in 51 patients, elongated in 11 patients and normal in 38 patients, with a p value of <0.001. Adhesions were found in 11 patients and difficult calot's was found in 13 patients, with a p value <0.001.

On histopathological examination, mild degree of inflammation was seen in 60 patients, with p value <0.001. Gall bladder was found contracted in 50 patients, elongated in 11 patients and normal in 39 patients, with p value <0.001. The most common type of gall stone was found to be mixed type seen in 58 patients, cholesterol stones seen in 32 patients, and pigmented stones seen in 10 patients. P value is <0.001.

4. Discussion

In our study the maximum patients were found in the age group of 31-40 years, 38 patients (38%). In a study by Selvi T R et al. study maximum patients were found in the age group of 51-60 years (27.69%).[2] In Siddiqui G F et al study the maximum patients presenting with chronic calculus cholecystitis was in 31-40 years (27.8%).[3] In Nagi G S et al study maximum patients with this pathology were found again in the age group of 31-40 years, (35.6%).[4]

In the present study a female preponderance was observed among the study population. With male:female ratio of 1:3.5. Similar results were seen in Selvi T R et al study with 64.1% of study population (50 patients) being females and 35.89% (28 patients) where male to female ratio being 1:1.8.[2] In Siddiqui G F et at study female constituted to be 87% of the study population, the male to female ratio was 1:7.[3] In a study done by Nagi G S et al 80.7% of the study population where females and male to female ratio 1:4.[4]

In this study the diet pattern of all the patients were assessed and it was found that 86 patients (86%) consumed mixed diet/non vegetarian diet and 14 patients (14%) consumed vegetarian diet. The ratio of mixed

diet: vegetarian diet is found to be 6:1. Chronic calculus cholecystitis is found to be most common in patients consuming mixed diet due to high protein and fat consumption leading to decreased fiber intake leading to increased gall stone formation as seen in Selvi T R et al study where the ratio of incidence of this pathology between mixed diet and vegetarian diet was found to be 8:2.[2] Similar results were found in Ezhil A et al study, with ratio being 6:1 and 85% consumed mixed diet and 15% consumed vegetarian diet.[5]

In this study the most common symptom was found to be abdominal pain, which was present in 73% of the patients, nausea and vomiting was seen in 21% of the patients, dyspepsia in 62% patients and fever only in 7% of the patients. On examining the patient's abdominal tenderness was seen in 71 patients (71%) and absent in 29 patients (29%). Palpable mass was felt in right hypochondrial region in 6 patients (6%) and absent in 94 patients (94%). In the study done by Selvi T et al, 66.67% patients (52 patients) where found to have abdominal pain, 13 patients (16.6%) had nausea and 10 patients (12.82%) had vomiting.[2]In study done by Siddiqui F G et al it was found that abdominal pain was the most common symptom found in 91.4% of the patients, dyspepsia was found in 61% patients, nausea and vomiting was seen in 20% of the patients. Palpable mass was elicited in 2.3% of the patients.Rachamalla R R study showed that 98% of the patients present with abdominal pain, dyspepsia was seen in 82.1% patients, nausea and vomiting noted in 54.7% of the patients and fever seen in 11% of the patients. Signs of abdominal tenderness was seen in 83.1% of the patients and palpable mass was felt in 15.7% of the patients.[6]

In Ezhil A Net al 's study abdominal pain was seen in 55% of the patients (55 patients), which is the most common symptom.[5]In Karlati SS et al study abdominal pain was seen in 86% of patients (89 patients), which was observed to be the most common symptom. Dyspepsia was seen in 64 patients (60.5%), nausea and vomiting were seen in 31 patients (29.8%).[7]In Mohandas Get al study abdominal pain was the most common symptom seen in 100% of the patients (50 patients), fever was seen in 23 patients (46%), vomiting was seen in 12 patient"' (24%).[8]In Doshi S R et al study abdominal pain was seen in 93.9% of the patients, nausea and vomiting in 35% of patients and fever in 15% of the patients.

The ultrasound findings of all the patients of chronic calculus cholecystitis were assessed and found that gall bladder thickness was >3mm in 86 patients (86%) and normal in 14 patients (14%) of the patients. In Ezhil A N et al. study it was found that gall bladder thickness >3mm was seen in 57% of the patients during ultrasonography. 80% of the patients were found to have small, multiple calculi and 20% patients had single large calculus.[5] In Rachamalla R R study gall bladder wall thickness was >3mm in 88.4% of patients, small multiple calculi were seen in 60% of the patients and 40% of the patients had large single calculus.[6]

The definitive treatment for chronic calculus cholecystitis is surgical removal of gall bladder, which can be either done laparoscopically (laparoscopic cholecystectomy) or open cholecystectomy. In study by Rachamalla R R study 61.5% of the patients underwent laparoscopic cholecystectomy and 38.9% patients underwent open cholecystectomy.[6]

Intra-operatively, the gall bladder gross morphology was studied and the gall bladder was found to be contracted in 51 patients (51%), found to be elongated in 11 patients (11%) and found to be normal in 38 patients (38%). In study done by Jain V et al. 20% of the patients had contracted gall bladder.[9]Adhesions were found in 11 patients (11%) and adhesions where absent in 89 patients (89%). The p value is <0.001. In Jain Vet al's study intraoperatively adhesions were seen in 9% of the patients.[9]

In this study, post-surgical excision, the gall bladder was sent for histopathological examination. It was found that gall bladder wall thickness was >3mm in 86 patients (86%), and normal in 14 patients (14%). Based on the number of inflammatory cells present 60% of the patients (60 patients) had mild inflammation, moderate inflammation in 24% of the patients (24 patients) and 16% had severe inflammation (16 patients) In Khan M D et al. study it was found that 78.17% had mild inflammation, 9.6% had moderate inflammation and 12.1% had severe inflammation.[10] In Ezhil A N et al. study it was found that gall bladder thickness >3mm was seen in 57% of the patients (57 patients) and <3mm in 43% of the patients (43 patients).[5] In Rachamalla R R study gall bladder wall thickness was >3mm in 88.4% of patient.[6]In Beena D et al study all the cases had inflammation and 144 patients (72%) had mild inflammation and 23 patients (11.5%) had moderate inflammation and 8 patients (4%) had severe inflammation.[11]

In this study, the gall stones where analyzed and it was found that 58% of the patients (58 patients) had mixed stones, 32% of patients (32 patients) had cholesterol stones, and 10% of the patients (10 patients) had pigment stones.

In Nagi G S et al. study 80.7% patients were found to have mixed stones, 13.5% had cholesterol stones and 5.8% had pigment stones.[4]In Ezhil A N et al. study 78% patients (78 patients) had mixed stones, 14% of patients (14 patients) had pigmented stones and 8% had cholesterol stones (8 patients).[5]In Karlatti S et al. study 80.7% of the patients had mixed stones (84 patients). It was found that mixed type of stone is more common.[7]In Rachamalla R R et al.study 89% of the patients had mixed stones, 9% of the patients had cholesterol stones and 2% of the patients had pigment stones.[6]

5. Conclusion

In our study it was found that, majority (38%) of the patients were 31-40 years old and was statistically significant. It was found that, the mean age of patients was 40.36 years. In our study female preponderance was present and is statistically significant.

It was also seen that most of the patients with chronic calculus cholecystitis consumed mixed diet (86%). The most common symptom of the patients was found to be abdominal pain (73%), and 71% of the patients had abdominal tenderness on examination. When the patients underwent ultrasonography of whole abdomen the gall bladder thickness >3mm was found in 86% of the patients, and 74% of the patients had small multiple calculi. The definitive treatment of chronic calculus cholecystitis is surgical excision of the gall bladder. 76% of the patients underwent laparoscopic cholecystectomy. Intraoperatively gall bladder was contracted in 51% and adhesions were found in 11%. On histopathological analysis, the gall bladder was found to be contracted in 50% of the patients, and gall bladder wall thickness >3mm was found in 86% of the patients. On analysing the gall stones the most common type of stones were found to be mixed stones (89%) in our study.

6. Source of Funding

None.

7. Conflict of Interest

None

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Author biography

Janani R G, Resident

Gyanendra Swaroop Mittal, Professor & Head

Manisha Goel, Associate Professor

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