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Original Research Article

A Prospective Study on Clinical Presentation and Management of Cholelithiasis in a Tertiary Care Hospital

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Abstract

Background: The prevalence of bile stones in India is estimated to be approximately 4%. This frequency is seven times greater among north Indians than among south Indians. In Western nations, the prevalence might reach 10-15%. The majority of them (>80%) are asymptomatic. Every year, around 1-2% of asymptomatic people develop symptoms that need surgery.

Aim: To investigate the age and gender distribution, varied forms of presentation, kinds of gall stones, available therapies, and outcomes.

Materials and Procedures: A prospective observational study was used in this investigation. The research was carried out in the surgery department of the SCB Medical college and Hospital, Cuttack.

The study period is from April 2022 to March 2023. Patients with gallstones admitting to general surgery wards and undergoing cholecystectomy comprised the study population. Our research includes 30 instances as a sample size.

Method of Sampling: Simple random sampling. Prior to the start of the research, authorization was obtained from the Institutional Ethical Committee.

Procedure for data collection: Demographic information such as age, gender, name, and employment are recorded; clinical symptoms of presentation with duration, related complaints, previous medical and surgical history, personal history such as food history, OCP use, alcohol intake, and family history are also recorded.

Statistical Analysis: The data was tabulated in Microsoft Excel 2016. Mean and Standard Deviation were used to depict data on a continuous scale. Numbers and Percentages were used to express categorical data. Graphs and tables were used to display the results. The P value and degree of freedom were computed and evaluated. Pearson's Chi Square test was used to demonstrate relationship between components, with p 0.05 regarded statistically significant.

Observations and Results: The major investigation of choice was USG abdomen, which was performed on all patients included in the research. Multiple stones in the United Kingdom were the most prevalent finding in this research, accounting for 67% of cases. In the United Kingdom, 30% of cases had a single stone.

In 17% of instances, the gall bladder wall was thickened. Cholelithiasis with choledocholithiasis was diagnosed in one case (3%).

Conclusion: In expert hands, laparoscopic cholecystectomy is regarded the treatment of choice in these individuals because it has superior results and is linked with less postoperative problems and morbidity. If severe adhesions or inflammation are discovered during laparoscopy, the patient should not be afraid to convert to an OC.

Introduction

The prevalence of bile stones in India is estimated to be approximately 4%. This frequency is seven times greater among north Indians than among south Indians. In Western nations, the prevalence might reach 10-15%. The majority of them (>80%) are asymptomatic. Every year, around 1-2% of asymptomatic people develop symptoms that need surgery. Female gender, obesity, and dietary variables are all important risk factors for developing calculous cholecystitis. Females had a higher risk of cholelithiasis than men, with a female to male ratio of 3:1 until the age of 50, and a ratio of roughly 1.5: 1 after that. In India, women outnumber men by 4.4 to 1. Westernisation is causing an increase in incidence in India. Gallstone disease is becoming more common across the world as a result of deep changes in dietary choices, lifestyle changes linked with excessive

junk food intake, and an increase in sedentary lifestyle. Approximately 75% of symptomatic gallstone disease patients seek medical care due to episodic stomach discomfort. Biliary colic is characterised by gallstones that induce intermittent occlusion of the cystic duct. Gallstones are often discovered accidentally in imaging examinations in people who do not have biliary symptoms. Every year, around 3% of individuals who were previously asymptomatic develop symptoms. Complications are emerging in 3 to 5% of these individuals. Cholelithiasis is diagnosed based on a history, physical examination, and imaging investigations. Because cholelithiasis is becoming more common in India, the current research focused on the demographics, clinical presentation, and postoperative pathological examination of excised gall bladders and gallstones.

Aim

To study the age and sex distribution, various modes of presentations, types of gall stones, various treatments available and its outcome.

Material & Methods

Study Design: A prospective observational study.

Study Area: The study was done at surgery department, SCB Medical college and Hospital, Cuttack

Study Period: Apr. 2022 – Mar.2023.

Study Population: Patients with Gall stones admitted to general surgery wards that underwent cholecystectomy.

Sample Size: 30 cases were included in our study.

Sampling Method: Simple Random sampling method.

Inclusion Criteria

- Patients age more than 18 years.
- Patients admitted with cholelithiasis.
- Patients with acute pancreatitis with etiology as cholelithiasis.
- Patients with CBD stone with primary gall stones.
- Patients with calculous cholecystitis.

Exclusion Criteria

- Patients who have not given consent.
- Patients with acalculous cholecystitis.
- Primary CBD stones without gall stones.
- Gall stones with congenital malformation of biliary tree and stricture of CBD.

Study tools and Data collection procedure

Demographic data such as age, gender, name, and employment are recorded; clinical symptoms of presentation with duration, concomitant complaints, prior medical and surgical history, personal history such as food history, OCP use, alcohol consumption, and family history are also recorded. Examination results for the presence of chronic calculous cholecystitis are documented, as are investigations such as total and differential counts, ultrasound findings of chronic calculous cholecystitis, and CT scan findings in instances of suspected diagnosis. All patients were examined in order to determine their fitness for surgery. Patients were informed about any complications. The patients were informed about the various surgical alternatives, their advantages, and potential problems. Patients were given the option of selecting their preferred surgical treatment. Intraoperative findings, challenges encountered, operation conducted, any postoperative issues, and permission was obtained. All patients received preoperative antibiotics when the essential preoperative preparations were completed. Anatomical changes and pathological characteristics were identified and recorded after opening the abdomen. The samples from the cholecystectomy was submitted for histological evaluation, and the gallstones were sent for chemical analysis. Antibiotics and normal postoperative care were administered to all patients. The patients were closely examined after surgery to see whether they had any issues. Patients were regularly released on the 2- 6th postoperative day in the case of laparoscopic surgery and the 4-8th postoperative day in an open system, unless they required to remain longer owing to problems. The length of the patient's post-surgical hospital stay, as well as the morbidity of the operating procedure, were recorded. Patients were given postoperative instructions on rest, food, and when to return to the surgical OPD for follow-up. All patients were monitored for one month.

Observations & Results

Table 1: distribution of the cases based on age and Gender in the study population

Age group	Female	Male	Total
21-30yrs	1	0	1
31-40yrs	4	1	5
41-50yrs	11	4	15
51-60yrs	4	4	8
>60yrs	1	0	1
Total	21	9	30

The youngest patient in the current research was 29 years old, while the oldest patient was 68 years old. The highest occurrence was seen in the present study patients aged 41-50, with a 50% incidence. In the current research, 9 patients (30% of the total) were male, whereas 21 patients (70% of the total) were female. According to this presentation, gallstones are more prevalent in women than in men, with a female to male ratio of 2.33:1.

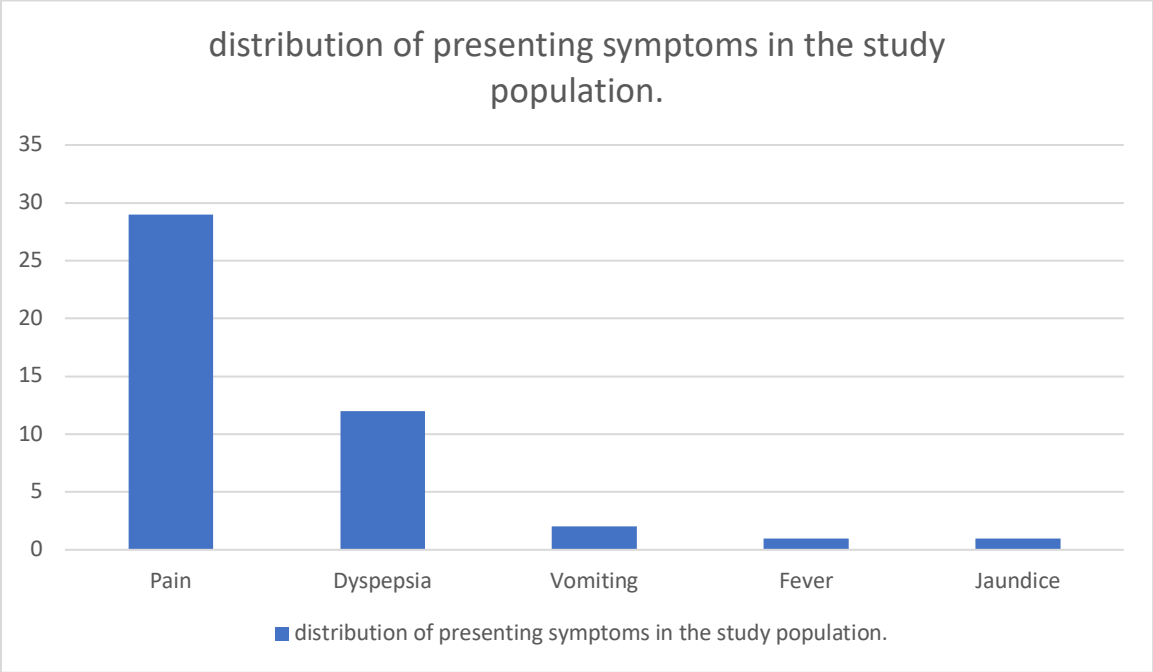

Figure 1: distribution of presenting symptoms in the study population

In the current research, 29 patients (97%) reported pain as their primary complaint. The majority of patients described intermittent colicky discomfort, whereas a minority reported pricking pain that was worsened by meal consumption. Twelve of them (40%) also experienced dyspepsia, which was the second most prevalent presentation in this research. Three patients complained of nausea and vomiting, while one had jaundice and another had a fever.

The main investigation of choice was an ultrasound of the abdomen, which was performed on all patients included in the research. In this research, multiple stones in GB were the most prevalent finding, accounting for 67% of patients. In the United Kingdom, 30% of cases had a single stone. In 17% of instances, the gall bladder wall was thickened. Cholelithiasis with choledocholithiasis was diagnosed in one case (3%).

The most prevalent consequence in this research was chronic cholecystitis (24 (80%). 1 (3%) patient had empyema gall bladder and 1 (3%) patient had perforated gall bladder out of 6 (20%) instances of acute cholecystitis. One patient (3%) had both Gb and CBD stones.

Table 2: Type of surgery performed in the study population

Type of Operation	No. of Cases	Percentage
Laparoscopic Cholecystectomy	15	50
Open Cholecystectomy	15	50

All of the patients were treated with one of the above-mentioned surgical methods. Eight of the thirty individuals had comorbidities. Four of the eight patients had diabetes, two had high blood pressure, one had both diabetes and high blood pressure, and one had coronary artery disease.

The open cholecystectomy surgery was used on 15 (50%) of the patients, whereas the laparoscopic cholecystectomy technique was used on 15 (50%) of the patients. Kocher's right subcostal incision was utilised in 14 instances of open cholecystectomies, and a midline laparotomy was performed in 1 case of acute cholecystitis with perforated gall bladder and peritonitis characteristics. No laparoscopic cholecystectomy patients were converted to open cholecystectomy. CBD stones were treated by ERCP, and after 6 weeks, a laparoscopic cholecystectomy was done.

Gall stone analysis was performed on all participants in the current investigation. Twenty of the thirty patients had mixed stones, and nine had cholesterol stones. There was just one patient who had pigmented gall stones.

Twenty-one individuals (or 70%) were diagnosed with chronic cholecystitis. Six patients (20%) were diagnosed with acute cholecystitis, including one with empyema gall bladder and one with a perforated gall bladder. Acute on chronic cholecystitis was reported by HPE in 3 (10%) individuals. In the course of the research, no instances of cancer were found.

Discussion

The bulk of the patients in this research were in their forties. There was no age group immune to the illness. This was shown to be compatible with Herman's and Rushad's investigations (4th - 5th decade).The participants in this research varied in age from 29 to 68 years. The incidence is highest in the fifth decade of life, followed by the sixth decade. The findings of this investigation are consistent with those of Herman et al.[1] Western research show that the highest occurrence occurs in the fifth and sixth decades of life. A change in diet is recognised to be a significant contributing factor in the peak age of incidence. In their studies, Ganey et al.[2] and Moreaux et al.[3] discovered comparable findings. In this research, 30% of the patients were male, while the remaining 70% were female. According to Battacharya's[4] research, 28.6% of the participants in his study were male, while 71.4% were female. A.P. Tamhankar.[5], Ganey et al.[2], and Major Alok Sharma et al.[6] discovered a similar gender predominance in favour of females, with 70% females and 30% men. The presence of oestrogen increases the risk in females, and the risk is twice when oral contraceptive pills and hormone replacement treatment are used. Pregnancy also contributes to gallstones since there is an enhanced surge of oestrogen in the first trimester of pregnancy. In our research, practically all of the patients, 29 out of 30 (97%), complained of right upper quadrant discomfort. Dyspepsia was the second most prevalent complaint in this research (40%). Vomiting affected 10% of the patients. One (3%) patient had fever, and another (3%) had jaundice. When compared to the current investigation, the findings obtained in the studies done by Ganey2 and Alok Sharma [6] differ. The second most frequent presentation in studies undertaken by Ganey [2] and Alok Sharma [6] was vomiting, while the second most common presentation in the current research was dyspepsia. In the current research, pain was the most prevalent complaint in 97% of the patients, with the right hypochondrium being the most common place, followed by the epigastrium. The majority of the patients reported intermittent colicky discomfort, with a few reporting pricking pain. There was a history of radiating discomfort towards the back in three (10%) individuals. There is a history of persistent recurring pain in patients with chronic cholecystitis, and 6 (20%) individuals experienced rapid start of pain. The majority of patients said that their discomfort became more intense after eating. Similar presentations were seen in the Alok Sharma [6], Ganey [2], Goswitz et al [7] series. In the current study, 44% (22 patients) of instances suffered nausea/vomiting. Dyspepsia is the second most prevalent complaint in this research, accounting for 40% of patients. When compared to the Alok sharma (8%) and Garney (21%), these figures are much greater. Vomiting in the current research is substantially lower than in the Ganey et al series. Vomiting was generally spontaneous and happened during pain attacks. The vomiting was neither bilious or projectile in nature. The ache did not go away after vomiting. Based on the clinical examination, ultrasonography, and biochemical results, all patients who vomited were diagnosed with acute cholecystitis. One (3%) subject in our research exhibited obstructive jaundice. When compared to Aloksharma and Garney's investigations, the incidence was lower. The jaundice was discovered to be caused by a gallbladder stone that had slipped into the common bile duct. Because there was a considerable rise in serum amylase and lipase, the patient was first handled conservatively, and he was diagnosed with acute biliary pancreatitis. After stabilising the patient, an ERCP was performed, and the stone in the common bile duct was successfully removed. After 6 weeks, this patient had laparoscopic cholecystectomy. The stones found in this patient were coloured. The patient had a fever and a ruptured gallbladder due to acute cholecystitis. At the time of presentation, the patient has peritonitis. All of the individuals in our research had ultrasonographic imaging and were confirmed to have gall stones. Multiple gall stones were the most prevalent finding on USG, accounting for 67% of the patients. In our investigation, the second most frequent finding of USG abdomen was a solitary (single) gall bladder stone in 30% of cases. Stones in the gall bladder and CBD were found in one (3%) subject.

The diameter of CBD is dilated by more than 1 cm in this instance. In the current research, thickened GB wall was seen in 17% of patients. The majority of the ultrasonographic findings in our investigation agreed with the findings of Alok Sharma et al.6. When compared to conventional open cholecystectomy, the incidence of perioperative morbidity is considerably lowered with the introduction of laparoscopic cholecystectomy. Because of these benefits, laparoscopic cholecystectomy has become the standard of care for gallbladder diseases. The current research findings also demonstrate that laparoscopic cholecystectomy has a better outcome than open cholecystectomy. Laparoscopic cholecystectomy had a decreased rate of surgery-

related complications. The current research found that open cholecystectomy took around 96 minutes and laparoscopic cholecystectomy took about 90 minutes. As a result, there is no significant difference in the length of surgery between the two treatments in the current research. In the current research, the problems seen in laparoscopic cholecystectomy were intraoperative stone leakage when extracting the specimen. Bile is the most common intraoperative complication in open cholecystectomy. This was seen in a patient with gallbladder empyema. Because the patient did not react well to the first therapy, an open cholecystectomy was required. The gall bladder was severely adhered to the surrounding tissues. The release of adhesions caused bile leakage leading to gall bladder rupture. The recovery phase was unremarkable. Wound infection (6.6%) and postoperative bile leak (6.6%) were the only postoperative problems identified in the open cholecystectomy group. The cause of surgery site infection was determined to be the patient's poor glycemic management. On examination, the patient complained of discomfort at the operated site, and there was erythema and induration at the suture site. Sutures were removed, and antibiotics were given to the patient based on the culture and sensitivity report. The postoperative bile leak was caused by reduced inflammation, insufficient closure of the cystic duct, or damage to the CBD. On the second postoperative day, the content of the drain, which contained bile, was used to make the diagnosis. The patient was handled conservatively since the bile flow rate via the drain was 100ml/day. In the current research, the average hospital stay for laparoscopic cholecystectomy is 4 days, with a range of 2-6 days, and for open cholecystectomy is 8 days, with a range of 6-12 days. The mean time for individuals to return to normal activity after laparoscopic cholecystectomy was 7 days, with a range of 5-9 days, but the mean time for open cholecystectomy was 11 days, with a range of 9-13 days. The drawbacks of laparoscopic cholecystectomy include a steep learning curve, higher technical demands, challenging intraoperative bleeding management, lack of tactile awareness, and a high level of hand-eye coordination. In our investigations, we experienced no such obstacles. In our research, there was no death or significant morbidity. The most common histological diagnosis in the current research was chronic cholecystitis. On HPE evaluation, 70% of the patients in the study group were found to have chronic cholecystitis. When compared to the Blackpool Victoria Hospital research, these outcomes were marginally lower. In the current investigation, 13% of patients had histological evidence of acute cholecystitis, the second most frequent complication found. These findings are consistent with the findings of the Blackpool Victoria Hospital research.

Based on the histology report, 10% of the patients in the current research were diagnosed as acute or chronic cholecystitis. However, no similar occurrences have been documented in the Blackpool Victoria Hospital research series. In the current investigation, gangrenous alterations in the gallbladder resulted in perforation in 3% of the patients. This finding corresponds to the incidence in the Blackpool Victoria Hospital dataset.

There was an incidence of gall bladder empyema in the current research, however there were no such cases in the comparison analysis. The mean length of hospital stay in the open cholecystectomy group in the current research was 8 days, which was longer than in the Barkenet al.[8] and Trondsen et al. [9] studies. In the present investigation, the incidence of mixed stones was 67%, which was lower than the incidence recorded by Mathor SN et al., which was 84%. In our research, 30% of patients had a cholesterol stone, although Mathor SN et al.[10] found that 12% of cases had a cholesterol stone. The incidence of pigment stones in our investigation is comparable to the Mathor SN et al series.

Conclusion

In expert hands, laparoscopic cholecystectomy is regarded the treatment of choice in these individuals because it has superior results and is linked with less postoperative problems and morbidity. If severe adhesions or inflammation are discovered during laparoscopy, the patient should not be afraid to convert to an OC. When compared to open cholecystectomy patients, the period of hospital stay has decreased with the introduction of laparoscopic cholecystectomy, and patients are returning to work sooner. Cosmetically, laparoscopic cholecystectomy is preferable.

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