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An Observational Study of Acute Cholecystis in 50 Patients at a Tertiary Care Hospital in South Gujarat

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Abstract: ***Acute cholecystitis is an inflammatory condition of the gallbladder, commonly resulting from gallstone obstruction of the cystic duct. This obstruction leads to increased intraluminal pressure, ischemia, and bacterial infection, triggering an acute inflammatory response. Clinical manifestations include right upper quadrant pain, fever, nausea, and vomiting, with. Diagnosis is primarily confirmed through ultrasonography, revealing gallbladder wall thickening and pericholecystic fluid. Treatment involves supportive care, antibiotics, and cholecystectomy, which can be performed either urgently or electively based on the patient's condition. Early intervention is crucial to prevent complications, such as gallbladder perforation, gangrene, and sepsis. This abstract reviews the pathophysiology, clinical presentation, diagnostic criteria, and treatment options for acute cholecystitis, emphasizing the importance of timely diagnosis and management for optimal patient outcomes.***

Keywords: acute cholecystis, pain abdomen, vomiting, right hypochondrium tenderness, USG, cholecystectomy

1. Introduction

Acute cholecystitis is acute inflammatory condition of gall bladder. Most common complication of gallstone disease, and cause of abdominal emergency, especially among middle aged women and elderly.1
Acute cholecystitis is mainly of two types:
1) Acute calculus cholecystitis
2) Acute acalculus cholecystitis

Acute Calculus Cholecystitis: [1]
In 95% of the case, it results from obstruction of cystic duct or by an impacted stone in Hartmann's pouch. This lead to stasis of bile in gallbladder. Residual Bile in gallbladder becomes highly concentrated and causes a chemical acute inflammation.

Acute Acalculus Cholecystitis: [1, 2]
Acute and chronic inflammation of the gallbladder can occur in the absence of stones and give rise to a clinical picture similar to calculus cholecystitis. It particularly seen in critically ill patients and those recovering from major surgery, trauma and burns. Mortality is high.

Aims and Objectives
1) To study the incidence of acute cholecystitis in different age group in both sexes.
2) To study different causes of acute cholecystitis.
3) To diagnose acute cholecystitis with the help of clinical features and different modalities of investigations.
4) Management of acute cholecystitis.

2. Materials and Methods

50 cases diagnosed as acute cholecystitis were entered into the study by any one or more of the following methods from Government Medical College, Surat January 2018 to January 2022.

Study Design: Retrospective Observational study.

Sample Size with calculation:
50 patients of acute cholecystitis admitted in ward of General Surgery of tertiary care Hospital during study period was taken.

Sampling Technique & Site:
- Purposive sampling of patients of acute cholecystitis as per inclusion and exclusion criteria
- Patients admitted in new civil hospital Surat under surgery department

Study Duration: January 2018 to January 2022

Study Population:
All patients of acute cholecystitis admitted in ward of General Surgery of tertiary care Hospital.

Sample Size:
All the patients 50 cases

Inclusion Criteria:
1) Both male and female
2) Age group of 18 to 80 years

Exclusion Criteria:

1) Patient with tuberculosis, diabetes melitus, hypertension, HIV
2) Age group <18 years & > 80 years
3) Pregnant women

Ethical Consideration:

This study was approved by Institutional Ethical Committee of this institute.

Data collection and analysis:

Data was collected by case record form and entered into MS excel 2016 and Data analysis was done in SPSS Software version G26.

3. Observations

50 cases of Acute cholecystitis was studied in the given period of January 2018 to January 2022. The results were tabulated as follows:

Types of cases studied:

Table 1: Types of Cases Studied

Type of Pathology	No. of Cases	Percentage [%]
A. Calculous Cholecystitis	46	92
B. Acalculous Cholecystitis	4	8
Malignancy	0	0
Idiopathic Acalculus Cholecystitis	0	0

In study of 50 patients (46) 92% are calculus cholecystitis and (4) 8% are acalculus cholecystitis.

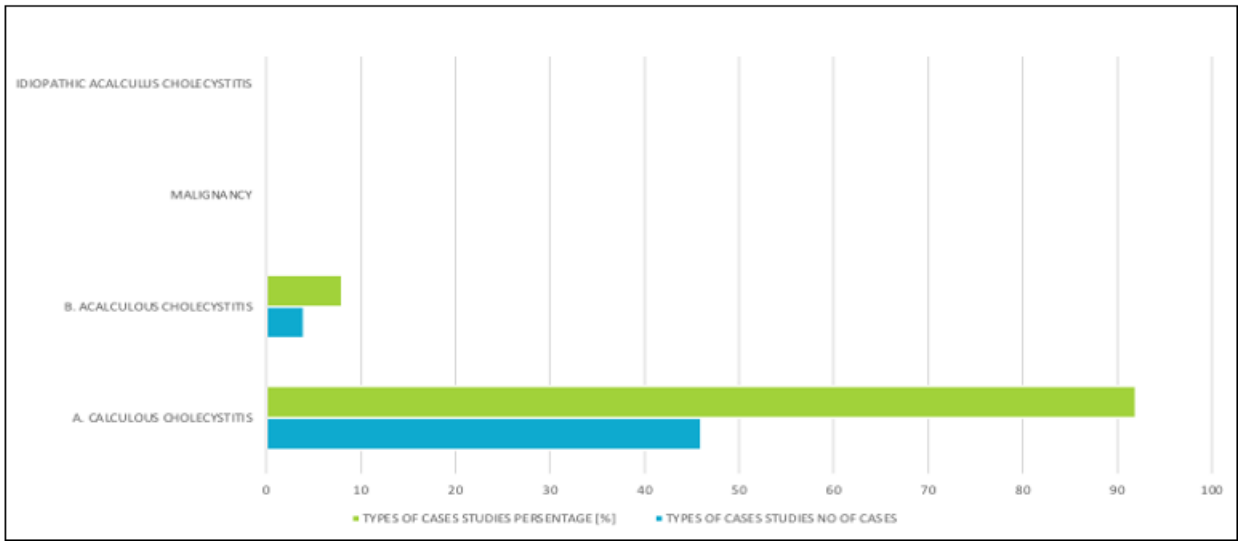

Chart 1: Types of cases wise distribution

Sex Distribution:

Table 2: Sex Distribution

Sex	Calculus Cholecystitis	Acalculus Cholecystitis	Percentage [%]
Male	14	4	[18]36
Female	32	0	[32]64

In study, Out of total 50 patients (18) 36% cases are male and (32) 64% cases are females. This suggests prevalence of disease is more in females as compared to males.

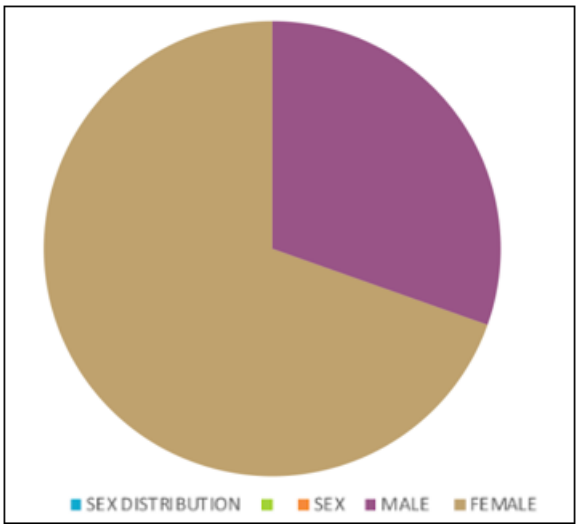

Chart 2: Sexwise Distribution Among Study Participants

Age Distribution:

Table 3: Age Distribution Among Study Participants

Age	Calculus Cholecystitis	Acalculus Cholecystitis	Percentage [%]
18 to 30	15	0	30
31 to 40	9	0	18
41 to 50	11	3	28
51 to 60	6	1	14
61 to 70	2	0	4
71 to 80	3	0	6

Out of total 50 Patients 30% study participants were belonged to 18 - 30 years of age group followed by 28% cases were from 41 - 50 years of age group. Only 4% and 6% patients were belonged to age group of 61 - 70 and 71 - 80 respectively.

This suggests prevalence of disease is more in younger than elderly patients.

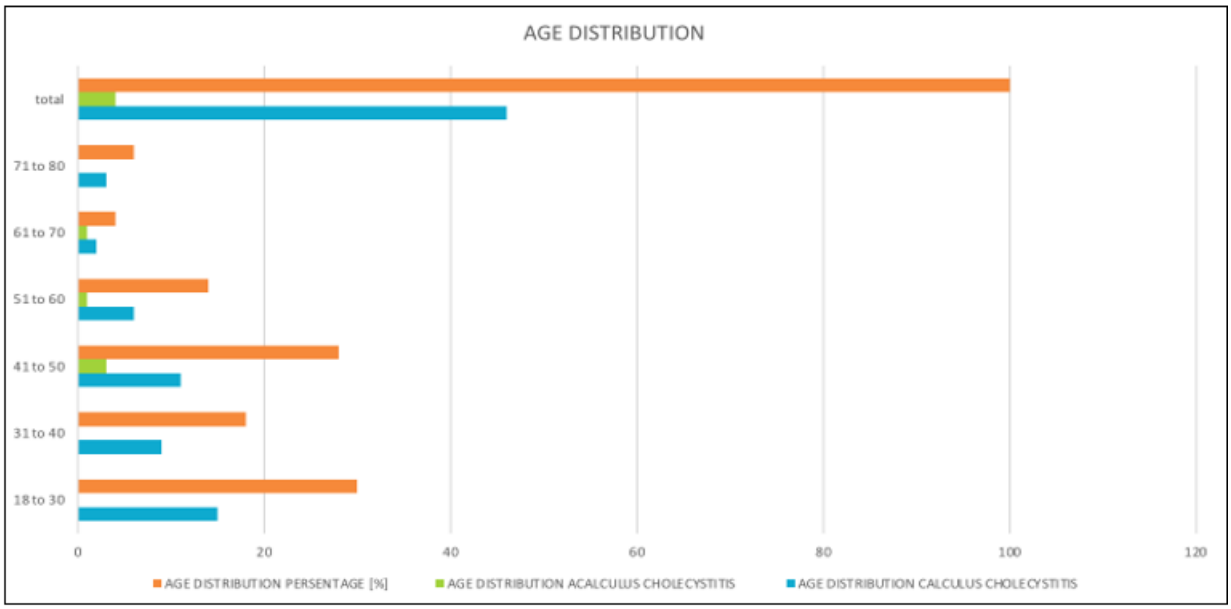

Chart 3: Agewise Distribution Among Study Participants

Age Distribution with Sex Distribution:

Table 4: Age Distribution with Sex Distribution

Age	Male	Female	Percentage
18 to 30	3	12	30
31 to 40	2	7	18
41 to 50	6	8	28
51 to 60	5	2	14
61 to 70	1	1	6
71 to 80	1	2	6

In study out of total 50 participants, in 30% participants from age group 18 - 30 years 12 & 3 participants were females and male respectively.

Followed by 28% participants were from 41 - 50 years with 8 females &.6 males, in 31 - 40 years age group 18% incidence rate with 7females and 2 males found.

Our study also suggests prevalence of gallstone disease in females than males in every age groups.

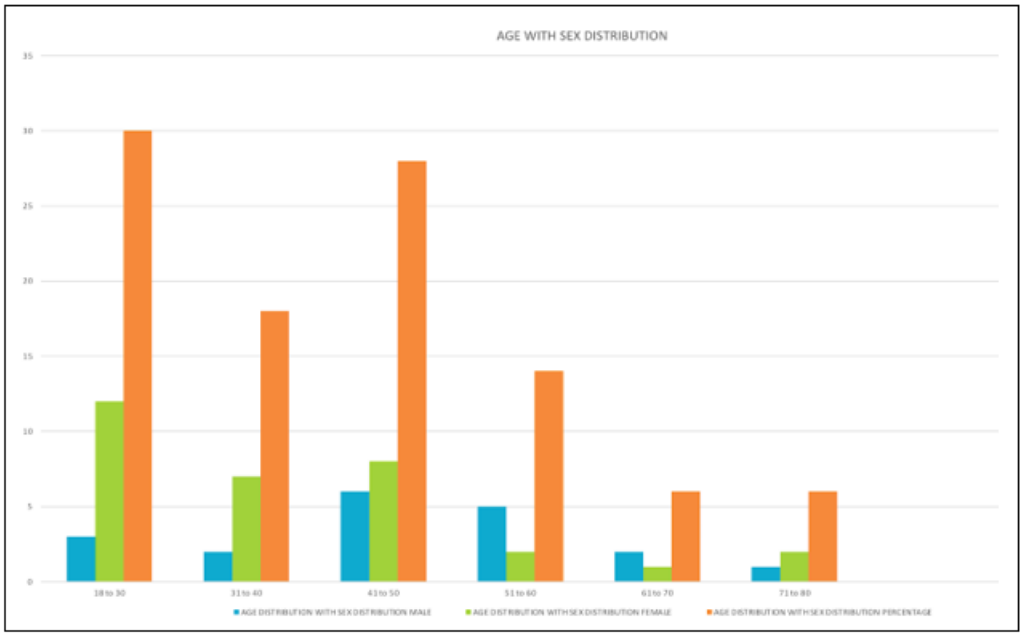

Chart 4: Age With Sexwise Distribution Among Study Participants

Modes of Clinical Presentation:

Table 5: Modes of Clinical Presentation

Symptoms	No. of Patients	Percentage [%]
Right Hypochondrial Pain	50	100
Vomiting	11	22
Fever	13	26
Jaundice	5	10
Leucocytosis	5	10

In total study participants, Pain was present in all the participants while 26% fever and 22% vomiting were present. Jaundice and leucocytosis were in 10% participants.

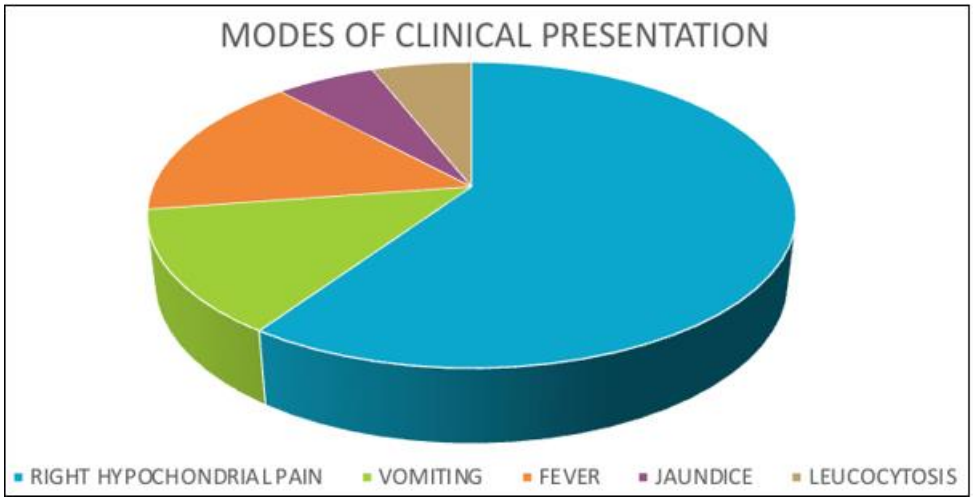

Chart 5: Modes of Clinical Presentation wise Distribution Among Study Participants

Management Given:

Table 6: Distribution According to Management Done

Management	Calculus Cholecystitis	Acalculus Cholecystitis	Percentage [%]
Emergency open Cholecystectomy	1	0	[1]2
Early open Cholecystectomy	0	0	[0]0
Elective open Cholecystectomy	0	0	[0]0
Cholecystostomy	0	0	[0]0
laproscopic Cholecystectomy	36	0	[36]72
Conservative management	9	4	[13]26

There was 2% participants underwent for emergency open Cholecystectomy, 26% study participants were managed conservatively and 72% were managed by laparoscopic cholecystectomy.

Early open cholecystectomy, elective open cholecystectomy & cholecystostomy were not performed among any participants.

Emergency open cholecystectomy was done in one participant who was presented in casualty with symptoms of acute cholecystitis and diagnosed as case of gallbladder rupture a complication of chronic calculus cholecystitis. Patient was discharged after 15 days of post - operative care.

According to our study laparoscopic cholecystectomy was done electively in calculus or acalculus cholecystitis patients within 48 to 72 hours of admission.

With reduced mortality patients were discharged after 2 - 3 days of post operative period.

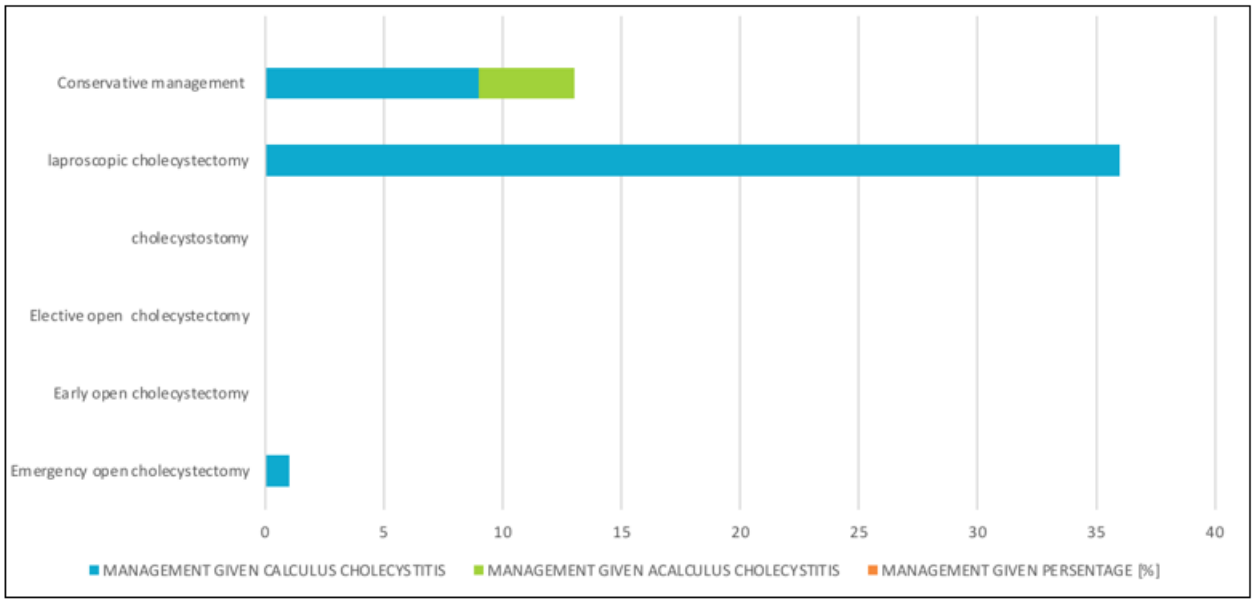

Chart 6: Management wise Distribution among Study Participants

Investigations Done:

Table 7: Distribution According to Investigations Done

Investigation	Calculus Cholecystitis	Acalculus Cholecystitis	Percentage [%]
ERCP	3	0	6
MRCP	4	0	8
Ultra Sonography	45	4	98

- 98% of the participants were diagnosed by ultrasonography only
- 6% & 8% participants were required ERCP & MRCP respectively for there final diagnosis.
- According to our study, Ultrasonography is able to diagnose cases of calculus or acalculus cholecystitis with status of common bile duct and pancreas also.
- In patients of common bile duct stone ERCP was required both as diagnosing & therapeutic purpose.
- Among participants 3patients were underwent for ERCP and 2 patients were underwent for sphincterotomy and stone removal was done and stent placement was done for drainage of bile.

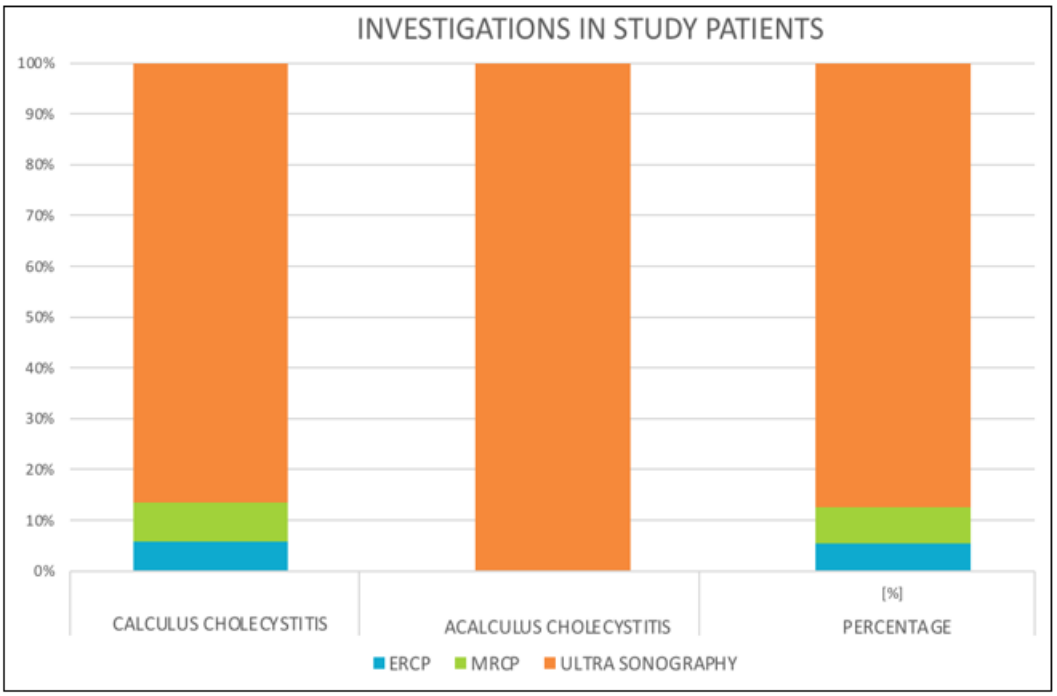

Chart 7: Investigation wise Distribution among Study Participants

4. Discussion

In this retrospective study 50 cases of acute cholecystitis admitted in tertiary healthcare centre, new civil hospital, Surat were selected in the given period of January 2018 to January 2022.

Acute cholecystitis is a frequent cause of abdominal emergencies. It is an acute upper abdominal condition always associated with macroscopic and microscopic acute inflammatory changes in the gallbladder.

Age Distribution:
In our study population of 50 cases maximum incidence occurred in the subgroup of population in 18 - 30 yrs followed by 41 - 50 years. This is in correlation with earlier literature which says acute cholecystitis is a disease of middle age, mainly calculous type. The another group is the malignancy group, which becomes more common in the older category.

This common prevalence of gallstones in the middle age group leads to the increased prevalence of Acute cholecystitis in the middle age group of 41 - 50.

This was reflected even in our study of 50 cases which showed a prevalence of 28% of cases in 41 - 50 yrs. group.

Surprisingly acute cholecystitis in the age group of 18 - 30 was found to be 30% in our study. Which shows increasing incidence of gall stones in younger age groups also.

In our study only 6% incidence found to be in elderly age group 61 - 80 years.14% incidence in subgroup of 51 - 60 age.

Age Distribution with Sex Distribution

Age	Male	Female	Percentage
18 to 30	3	12	30
31 to 40	2	7	18
41 to 50	6	8	28
51 to 60	5	2	14
61 to 70	1	1	6
71 to 80	1	2	6

Sex Distribution
Out of the 50 cases studied 32 were females and 18 were males accounting to 64% and 36% respectively. It showed that incidence of acute cholecystitis was higher in female population than the males. Majority of the females were married and had more than one children. This is consistent with literature that acute cholecystitis is common surgical emergency in the middle aged women [30]. There are many reasons that the female population is a target for this disease.

Type of Cases:
In our study of 50 population, 92% cases were found to be of calculus cholecystitis type and rest 8% cases was of acalculus cholecystitis type.

Kune and Birks study of 1970 showed gallstones in 98% of acute cholecystitis, malignant obstruction in 1% and acalculous cholecystitis 1%.

In our study, showed gallstones in 92% of acute cholecystitis and 8% acalculus cholecystitis. Savaco et al 1996 in their study in Yale University studied the de novo presentation of acute acalculous cholecystitis in the outpatients. In their study 47 patients were studied of which 36 patients (77%) did not have any evidence of acute illness or trauma. The study showed that acalculous cholecystitis can occur de novo without the setting of Intensive care surroundings of narcotics, ventilation, TPN or Transfusions.4 patients in our study were males.

In the Yale study significant vascular disease was observed in 72% of the patients. The 4 patients in our study did not have any evidence of vascular disease. No risk factors were found.

Modes of Clinical Presentation:
In our study of 50 cases all the cases were presented with right hypochondrial tenderness [100%].26% (13 patients) presented with pyrexia, vomiting was observed in 22%, leucocytosis in10%. Jaundice was present in 5 patients [10%], of which 2 had CBD stones, they underwent ERCP and stone removal with stent insertion was done.

Distribution according to Investigations Done:
Out of 50 patients, 98% of the participants were diagnosed by ultrasonography only 6% & 8% participants were required ERCP & MRCP respectively for there final diagnosis.

According to our study, Ultrasonography is able to diagnose cases of calculus or acalculus cholecystitis with status of common bile duct and pancreas also. In patients of common bile duct stone ERCP was required both as diagnosing & therapeutic purpose. Among participants 3patients were underwent for ERCP and 2 patients were underwent for sphincterotomy and stone removal was done and stent placement was done for drainage of bile.

ERCP used to treat problems of the bile and pancreatic ducts. ERCP also used to diagnose problems of the bile and pancreatic ducts if they expect to treat problems during the procedure. For diagnosis alone, use of noninvasive tests—tests that do not physically enter the body—instead of ERCP.1[8] Noninvasive tests such as magnetic resonance cholangiopancreatography (MRCP) —a type of magnetic resonance imaging (MRI) [18]—are safer and can also diagnose many problems of the bile and pancreatic ducts.

Doctors perform ERCP when your bile or pancreatic ducts have become narrowed or blocked because of gallstones that form in your gallbladder and become stuck in your common bile duct infection acute pancreatitis chronic pancreatitis trauma or surgical complications in your bile or pancreatic ducts pancreatic pseudocysts tumors or cancers of the bile ducts tumors or cancers of the pancreas.

Distribution according to Management Done:
In our study of 50 cases, There was 2% participants underwent for emergency open cholecystectomy, 26% study participants were managed conservatively and 72% were managed by laparoscopic cholecystectomy.

Early open cholecystectomy, elective open cholecystectomy & cholecystostomy were not performed among any participants.

Emergency open cholecystectomy was done in one participant who was presented in casualty with symptoms of acute cholecystitis and diagnosed as case of gallbladder rupture a complication of chronic calculus cholecystitis. Patient was discharged after 15 days of post - operative care.

According to our study laparoscopic cholecystectomy was done electively in calculus or acalculus cholecystitis patients within 48 to 72 hours of admission.

With reduced mortality patients were discharged after 2 - 3 days of post operative period.

According to Tokyo Guidelines 2018 surgical management of acute cholecystitis laparoscopic cholecystectomy is safer, less time consuming, with less complications rate and post - operative mortality rate.[28]

5. Conclusions

50 cases diagnosed as acute cholecystitis were studied according to their age and sex wise from Governmet Medical College, Surat January 2018 to January 2022. The different causes of acute cholecystitis were evaluated. The different modalities of diagnosis and investigations were scrutinised. Various ways of management of acute cholecystitis were studied. The following is the conclusion of the study.

1) Types of cases wise distribution
- Acute Calculus cholecystitis was commonest type with incidence rate of 92% in our study.
- Acute acalculus cholecystitis was 2nd common type with incidence rate of 8%.
- Predisposing factors related to acalculus cholecystitis was not demonstrated in our study.

2) Sex wise distribution
- Incidence of Acute calculus cholecystitis is most common in females.
- Acalculus cholecystitis is common in males.
- Among males most common type is calculus cholecystitis.

3) Age distribution
- Incidence of Acute cholecystitis is more common in age group of 18 - 50 years.
- Incidence of Acute cholecystitis is less common in age group of 61 to 80 years.

4) Modes of Clinical Presentation wise Distribution
- Pain is the commonest presentation in our study with 100% incidence rate.
- Fever and vomiting incidence rate is 26% & 22% in our study
- Jaundice and leucocytosis only present in 10% cases.

5) Investigation wise distribution
- Ultrasonography is able to diagnose 98% cases of acute cholecystitis.
- ERCP used as both diagnostic and therapeutic purpose.

6) Management wise distribution
- Laparoscopic cholecystectomy is preferable management nowadays according to our study
- Emergency Open cholecystectomy done in 2% cases which was done for complication of chronic calculus cholecystitis, gallbladder rupture. so it is preferable in emergency cases in nowadays also.
- Cholecystectomy remains one of the most common operations performed in the United States and worldwide. Laparoscopic cholecystectomy is currently the standard for treatment of gallstone and gallbladder disease.

- There are numerous advantages of laparoscopic cholecystectomy over open cholecystectomy, including decreased pain, length of stay, recovery time, and incisional complications, and improved cosmesis. However, occasionally anatomic or physiologic considerations will hinder or preclude the minimal access approach, and conversion to an open operation in such cases reflects sound clinical judgment and should not be considered a complication. The goal of any cholecystectomy, whether laparoscopic or open, is the safe removal of the gallbladder while avoiding injury to the CBD at all costs.2

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