

A Single Institutional Study of Gall Stone Disease

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ABSTRACT:- Calculus disease of the biliary system is one of the most common disorders affecting the gastrointestinal tract constituting a major cause of morbidity. There has been a marked rise in the incidence of gall stone disease in the west during the past century. In the UK, USA and Australia, the prevalence rates varies from 15- 25%. In India, it is more common in North India than in South India. Similarly the incidence in Eastern India is higher than in the West. Gallstones are classified into two types -

1) Pure gallstones

Cholesterol gallstones 70% Pigment gallstones 30% Calcium carbonate gallstones

2) Mixed and combined stones

About 50% of patients with gall stones are asymptomatic. 1 to 2% of asymptomatic patients will develop symptoms requiring cholecystectomy per year, making cholecystectomy one of the most common operations performed by surgeons. Recently minimally invasive surgery improves the patient's compliance and reduces the morbidity.

This study was undertaken to study the age, sex incidence and various modalities of clinical presentation of Gall stone disease. Bacteriological analysis of the bile collected from all cases subjected to cholecystectomy was done in our study so as to identify the commonest type of organism associated with gall stones.

Keywords- calculus, cholecystectomy, cholesterol, gall stone

I. INTRODUCTION

Calculus disease of the biliary system is one of the most common disorders affecting the gastrointestinal tract constituting a major cause of morbidity. Incidence of gallstones increases with age[1],[2]. It is more common in females than males (M: F = 1:4)[3], [4], [5]. About 50% of patients with gall stones are asymptomatic. 1 to 2% of asymptomatic patients will develop symptoms. In 1972 in a review of biliary bacteriology in 200 consecutive patients with gallstone disease, Tabata and Nakayama found that more than 80% patients had evidence of bactibilia (defined as more than 100000 colony — forming units/ml).[6]. In 1984 - In comparing black and brown pigment stones Cetta et al found positive bile culture in 25% of patients with black pigment stones and in 100% patients with brown pigment gallstones. In 1990 — Fransesco Cetter M. documented for the first time that bile infection by E.coli is a preceding factor in brown stone formation[7],[8]. Since , there was no study from India, particularly South India to know about the epidemiology and clinical features of gall stone disease, this study was undertaken for the same purpose and also to identify the commonest organisms associated with gall stone disease in our patients.

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III. STUDY

Methodology: Source of data - Patients admitted to Govt. Rajaji Hospital with the diagnosis of Gallstone disease were taken for this observational study from January 2018 to July 2018.

Type of study: It is a prospective study.

Inclusion criteria

Patients of age >12 years and <65 years

All proven cases of gallstone disease who got admitted to the hospital for cholecystectomy both open and laparoscopic cholecystectomy.

Exclusion criteria

- Acute cholecystitis
- Acute acalculus cholecystitis Emphyema gall bladder Mucocoele of the gall bladder, Jaundiced patients.
- Gallstones with multiple common bile duct stones (multiple CBD and intrahepatic stones).
- Patients who refused surgery

Total number of patients: 50

Proforma:

NAME :

AGE : I.P. No.

SEX : WARD No:

RELIGION : UNIT :

OCCUPATION

D.O.A. : ADDRESS

D.O.S. : D.O.D.

COMPLAINTS

1. Abdominal Pain
2. Sensation of Fullness
3. Nausea and Vomiting
4. Jaundice
5. Fever
6. Mass
7. Itching over the body
8. Appetite
9. Bowel habits
10. Colour of the urine

HISTORY OF PRESENTING ILLNESS

1. Abdominal Pain

- a. Mode of onset
- b. Site of pain
- c. Character of pain
- d. Duration of each attack
- e. Radiation or referred pain
- f. Effect of pressure and respiration
- g. Relation to food
- h. Relieving factors / Aggravating factors

2. Sensation of Fullness

3. Nausea and vomiting

4. Jaundice

- a. Duration
- b. Sites
- c. Intensity
- d. Type
- e. Itching
- f. Variation in intensity
- g. Recurrent attacks

5. Fever

- a. Duration
- b. Type
- c. Severity
- d. Diurnal variation
- e. Associated with chills and Rigors

6. Mass / Lump

- a. Site
- b. Mode of onset
- c. Progression
- d. Pain in the swelling
- e. Any associated factors
- f. Blood disorders

PAST HISTORY

1. Jaundice with pain and fever
2. Similar attacks of pain
3. Blood transfusion
4. Vaccination
5. Drugs
6. Abdominal surgery like
7. Enteric fever

PERSONAL HISTORY

1. Diet
2. Appetite
3. Dislike for fatty food
4. Sleep
5. Alcohol amount and quantity
6. Smoking
7. Bowel habits
 - a. Amount of stool
 - b. Colour of stool
8. Micturition
 - a. Amount of urine
 - b. Colour of urine

MENSTRUAL HISTORY

1. Menarche
2. LMP
3. PARA
4. Post Partum
5. Abortion

FAMILY HISTORY

1. Jaundice
2. Gallstones
3. Diabetes

TREATMENT HISTORY OF ALLERGY

PHYSICAL EXAMINATION

1. General appearance
2. Built
3. Anemia
4. Cyanosis ±
5. Clubbing ±
6. Lymphadenopathy
7. Jaundice
8. Anasarca
9. Thrombophlebitis
10. Spider naevi

VITAL SIGNS

1. Pulse
2. Blood pressure

3. Respiratory rate

4. Temperature

ABDOMINAL EXAMINATION

Inspection

Contour

Movement of all quadrants with respiration

Skin

Engorged veins

Visible pulsations and peristalsis

Umbilicus

Hernial orifices

External genitalia

Swelling

- Site - Surface
- Size - Borders
- Shape - Movement with
- Extent - Plane of the swelling

Palpation

- | | |
|------------------------------------|---------------------------|
| 1. Local rise of temp/hypaesthesia | 7. Surface |
| 2. Tenderness | 8. Borders |
| 3. Position | 9. Mobility |
| 4. Size | 10. Murphy's sign \pm |
| 5. Shape | 11. Consistency |
| 6. Extent | 12. Plane of the swelling |
| 13. Liver | |
| Size | |
| Borders | |
| Consistency | |
| Surface | |
| Mobility with respiration | |
| 14. Spleen | |

PERCUSSION

Light percussion of abdomen

AUSCULTATION Systemic examination

Cardiovascular System

Respiratory system

Central nervous system

PROVISIONAL DIAGNOSIS

INVESTIGATIONS

1. Blood

a.HB

b.TC DC

c.CT

d. PTT

e. BT

f.PT

g. RBS

h. Blood Urea

i. Serum Cholesterol

j. Serum Creatinine

2. Urine

a. Albuminc. Microscopy

b. Sugar d. Colour

3. Liver Function tests:

a. S. Bilirubin

b. S. Alkaline Phosphate

c. S. Albumin

d. S. Globulin

- e. SGOT
- f. SGPT
- g. Total proteins
4. Ultrasound
5. Radiological examination
6. CT Scan

DIAGNOSIS TREATMENT Medical Surgical - Open Laparoscopic

Postoperative investigations

Bile culture report Histopathological report

Sample collection

a) Bile

Bile was aspirated from the gallbladder of the patient who underwent open cholecystectomy using a sterile syringe (5 ml). In case of laparoscopic cholecystectomy, bile was collected from excised gall bladder. The sample was collected in sterile bottle and was transferred to microbiology laboratory. In the laboratory the bile sample was inoculated in the basal media like nutrient agar, MacConlcey agar, blood agar in the temperature of 37°C and the results were read after 18-24 hours for growth of organisms. Identification of species was done using biochemical tests like indole test, citrate test, urease test, TSJ test, oxidase test, gram staining, motility test. Antibiotic sensitivity testing was done after identification of the organism. Antibiotic sensitivity test was done with amikacin, gentamycin, ciprofloxacin, ceftazidime, cefotaxime, ceftriaxone, cotrimoxazole, ceftazidime + clavulanic acid.

Results:

- In our study the age group of 50 – 65 years was more commonly affected, 22 among 50 cases were found to belong in this group. Females were more commonly affected in the ratio of 3:2(Fig 1; TABLE 1)
- The most common clinical presentation among the cases studied was abdominal pain, all the cases studied presented with abdominal pain. The second most common presentation was nausea/vomiting, which was the presenting symptom in 18 cases.(Fig 2; TABLE 2)
- Culture reports of the bile revealed organism in 21 cases. KLEBSIELLA was the most common organism followed by E – Coli.(Fig 3; TABLE 3)
- In our study most of the stones recovered from the gall bladder were Black/Pigment stones, which constituted 68% of the cases studied.(Fig 4 ; TABLE 4)
- Total number of cases operated – 50. Of this, open cholecystectomy was done in 28 cases, laparoscopic cholecystectomy in 17 cases and lap converted to open cholecystectomy in 5 cases.(Fig 5 ; TABLE 5)

Discussion:

- The age and sex incidence of gallstone formation observed in our study is given in Table no I and Fig 1 of results. The incidence was more in females (62%) 31 numbers than in males (28%)- 19 numbers among the total 50 cases. Similar observations were given by National Academy of Medical Sciences in Nepal. However in the study of C-Y Chen et al 1995 the incidence is more common in males. The incidence of gallstone was highest (22 numbers) in 51 to 65 year age group in both males and females followed by age group 31-40 years (12 nos.)
- The sex distribution of gallstone formation observed in our study was found to be comparable and similar to the observation made by Ahmed H Kissebah et al.
- The clinical presentation of gallstone disease observed in our study was abdominal pain followed by nausea and vomiting. The observations of our study were similar to that of Multicentre Italian Study of Cholelithiasis, DJEHL et al and Kelnische waarde van et al Netherlands.
- The bacteriology of bile culture observed in our study [Table no 3 Fig no 3 of results] revealed KLEBSIELLA as the commonest organism followed by Escherichia Coli. However in the study of Chang WT Lee et al 1991 Muhsin Kaya et al Turkey 2010-2011 and Manojkumar Sahu, Amith Kumar Datta et al 2007-2008 the commonest organism was E.Coli.
- The colour of Gallstones observed in our study [Table no 4 and Fig.4] was black pigment stone(34nos) similar to the observations made by Pammysinha et al.
- In our series out of 50 cases, 28 cases were treated with open cholecystectomy, 17 patients with laparoscopic cholecystectomy and in 5 patients laparoscopic cholecystectomy was converted to open cholecystectomy.

IV. FIGURES AND TABLES

Table 1 – Age and Sex Distribution

AGE	MALE	FEMALE	TOTAL
13 – 20	0	0	0
21 – 30	2	5	7
31 – 40	4	8	12
41 – 50	1	8	9
51 – 65	12	10	22
TOTAL	19	31	50

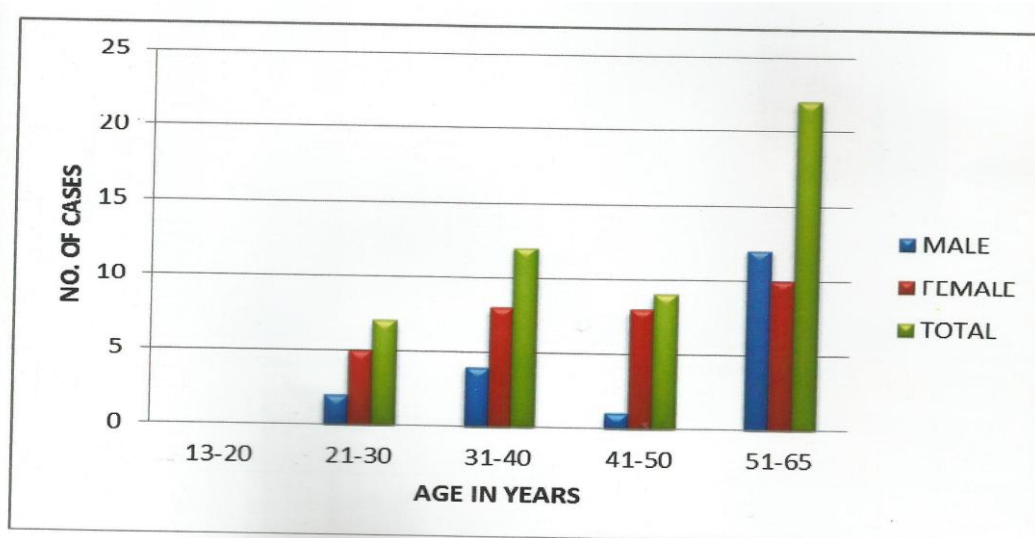


Figure 1 – age and sex distribution

Table 2 – Clinical Presentation of Gall stones

PRESENTATION	CASES
ABDOMINAL PAIN	50
FEVER	11
NAUSEA/VOMITING	18

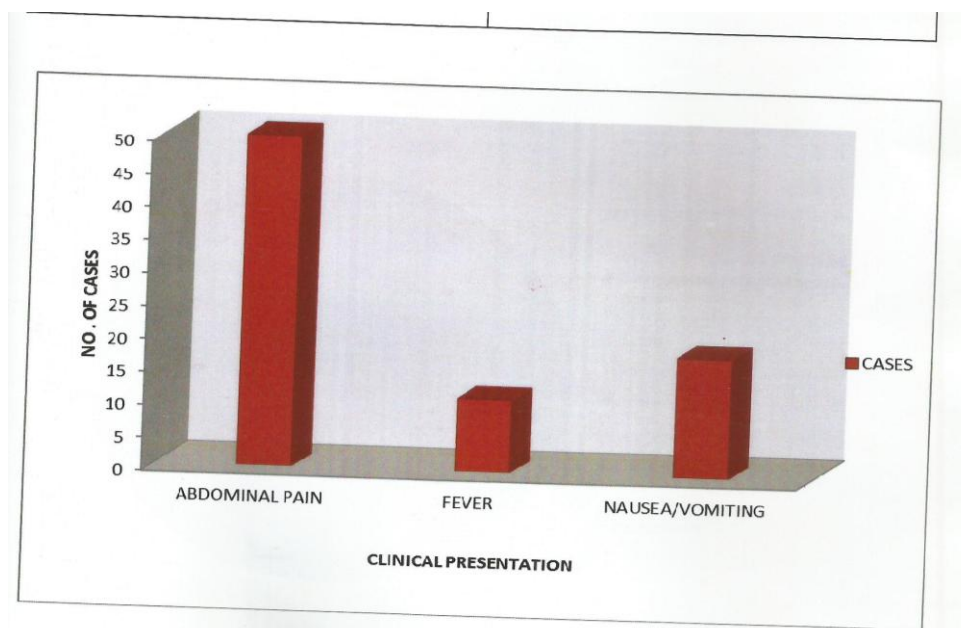


Figure 2 – clinical presentation of gall stones

Table 3- Bacteriology of Bile culture

BACTERIA	CASES
Klebsiella	10
E.Coli	4
Coagulase(-)staphylococcus aureus	3
Proteus Vulgaris	2
Pseudomonas	2
No growth	29

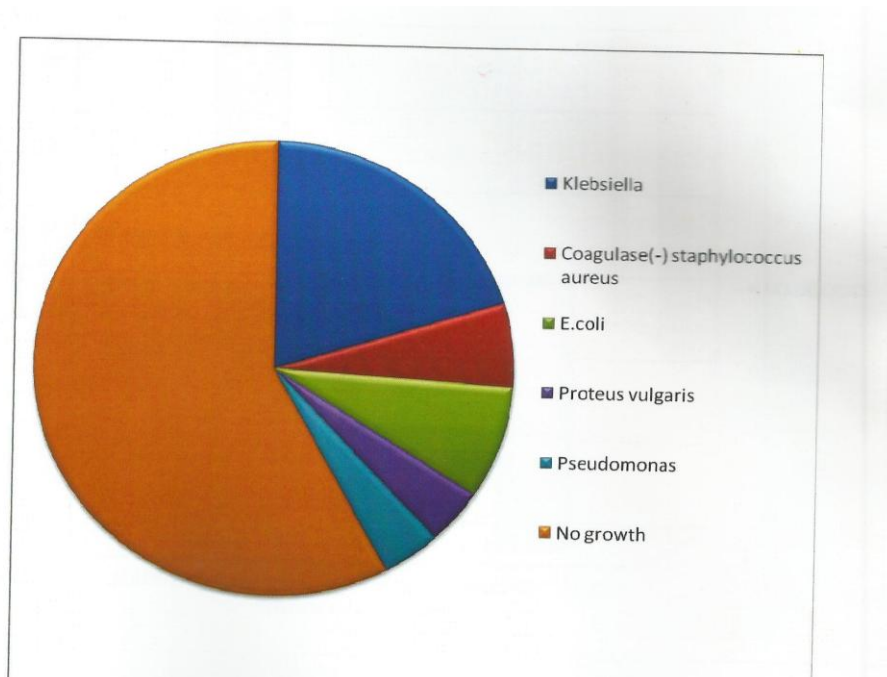


Figure 3 – bacteriology of bile culture

Table 4 – Colour of Gall stones

COLOUR	CASES
BLACK/PIGMENT STONES	34
YELLOW/CHOLESTEROL STONES	16

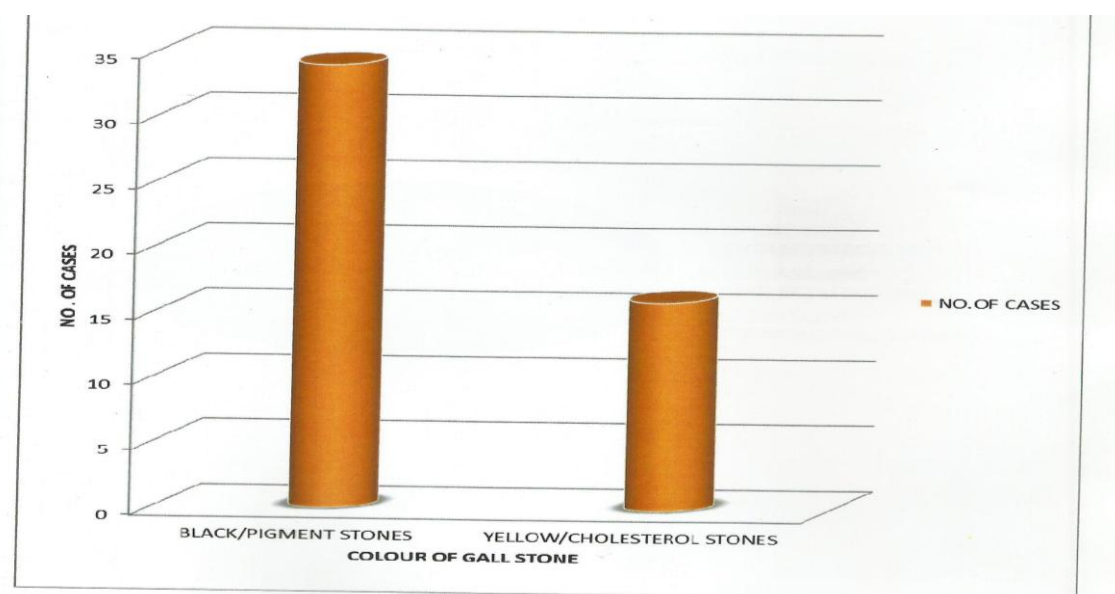


Figure 4 – colour of gall stones

Table 5 – Surgical treatment given

PROCEDURE	CASES
OPEN CHOLECYSTECTOMY	28
LAPROSCOPIC CHOLECYSTECTOMY	17
LAPROSCOPIC CONVERTED TO OPEN	5

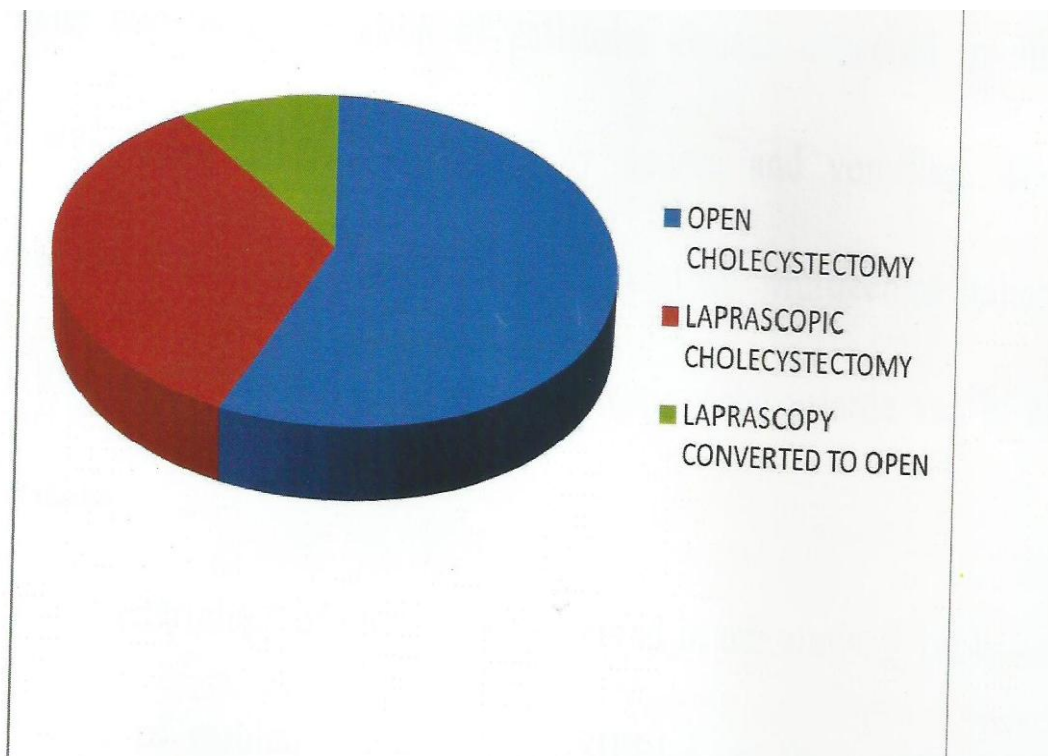


Figure 5 - Surgical treatment given

V. CONCLUSION

From observation of our prospective study of 50 cases, the following conclusions were derived

- Gallstone disease is common in females than in the males and the age group was 51 to 65 years.
- All the cases presented with right hypochondriac pain. Nausea and vomiting were present in 18 cases and fever was present in 11 cases.
- Ultrasound abdomen was the main investigation to detect gall stones and MRCP to know the anatomy of common bile duct.
- In our study, 28 patients underwent open cholecystectomy, 17 patients underwent laparoscopic cholecystectomy and 5 patients underwent laparoscopy which was converted to open cholecystectomy for practical difficulties.
- 21 cases showed organisms in bile culture of which 17 were females and 4 were males
- The most common microorganism isolated from bile culture was Kiebsiella in our study although B. Coli is the commonest organism as per standard text books. Our study revealed E.Coli growth only in 4 patients.
- 34 cases in our study showed pigment stones and 16 cases were cholesterol stones.
- Histopathological examination of gallbladder wall showed features of chronic calculus cholecystitis in all the cases.

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