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Clinical profile of patients with gallstone disease

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Abstract

The potential gallstone patient probably secretes a bile whose mean daily bile composition contains excessive cholesterol. The gallbladder bile from these patients thus becomes super saturated with cholesterol. If the level of supersaturation is very marked, precipitation of cholesterol may occur spontaneously. If only a moderate degree of supersaturation is present, nucleation may be necessary to initiate precipitation. After admission a detailed history was taken and clinical examination carried out. Various investigations were done to assess the patient. All 25 cases were subjected to laparotomy and all of them were evaluated before surgery with Ultrasonography. All patients had cholecystectomy as the main procedure. The decision regarding exploration of CBD was made on the basis of clinical, investigation and operative criteria. The commonest symptom in our series was pain abdomen (96%), followed by vomiting 32%, dyspepsia (24%), Jaundice (16%), fever (32%).

Keywords: Gallstone disease, jaundice, fever

Introduction

Man is afflicted by 2 principal types of gallstone disease. One involves bile pigment metabolism and features stones, composed of pure calcium bilirubinate, pigment stones. The other major variety of gallstones, found in man involves cholesterol and bile acid metabolism, cholesterol stones^[1].

Cholesterol stones i.e. stones of pure cholesterol or stones having cholesterol as the major chemical constituent account for most of the gallstone disease in America, Europe and Africa. Exceedingly rare are the stones made up of calcium carbonate or phosphate or calcium soaps of long chain fatty acids^[2].

Bile is 85 - 95% water, cholesterol is insoluble in water and must be maintained in solution. This may be done by the formation of 'micelles', that have a hydrophilic external surface and hydrophobic internal surface. Cholesterol is incorporated into the hydrophobic interior. Phospholipids are inserted into the walls of the micelles, so that they are enlarged. These mixed micelles are thus able to hold more cholesterol. As a general rule patients with cholesterol gallstones have bile containing excess cholesterol^[3].

The potential gallstone patient probably secretes bile whose mean daily bile composition contains excessive cholesterol. The gallbladder bile from these patients thus becomes super saturated with cholesterol. If the level of super saturation is very marked, precipitation of cholesterol may occur spontaneously. If only a moderate degree of supersaturation is present, nucleation may be necessary to initiate precipitation. Many small cholesterol crystals may flocculate to produce aggregates or single crystals may grow to form individual stones. Finally, the stones may block the cystic duct or common duct and thus cause symptoms resulting from obstruction or inflammation^[4,5].

Cholesterol gallstone disease can be subdivided into 5 stages

Stage I: Genetic, biochemical, metabolic defect leading to the production of a bile with excess cholesterol relative to phospholipid and bile salt.

Stage II: Chemical stage is the production of an abnormal supersaturated bile.

Stage III: Physical stage involving nucleation, flocculation and precipitation of cholesterol crystals. Nucleating agent is a microlith of a calcium salt of one of the anions like bilirubin, carbonates, phosphates.

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Stage IV: Involves the growth of microscopic crystals into microscopic stones.

Stage V: Production of clinical symptoms by the gallstone.

Several different types of pathophysiologic abnormalities can lead to abnormal bile and ultimately to cholesterol stones. Atleast 4 types of pathophysiologic abnormalities are manifested by hepatic secretion of an excess quantity of cholesterol relative to bile salt and phospholipid such that gall bladder bile in these patients becomes supersaturated with cholesterol. These four types all involve hepatic metabolism of cholesterol and bile salts and enterohepatic circulation of bile salts. A fifth type involves an abnormality of EHC whereas the sixth type involves defects arising primarily in the gallbladder, sphincter of oddi or in gallbladder bile per se [6].

Methodology

This study has been based on the analysis of 25 cases of gallstones admitted to The Medical College Hospital. After admission a detailed history was taken and clinical examination carried out. Various investigations were done to assess the patient. All 25 cases were subjected to laparotomy and all of them were evaluated before surgery with Ultrasonography. All patients had cholecystectomy as the main procedure. The decision regarding exploration of CBD was made on the basis of clinical,

investigation and operative criteria. The associated disorders were treated on their own merit. Patients diagnosed as having associated medical disorders like diabetes, Hypertension or bronchial asthma were evaluated carefully and treated accordingly before taking them for surgery. In the immediate postoperative period, patients were followed up every day, with continuous bedside monitoring of vital data. Due attention was paid to note the development of any complication. Suitable and appropriate treatment was instituted from time to time according to the needs of the patients. After satisfactory improvement, patients were discharged from the hospital. Patients who were on T-tube drainage in postoperative period had T-tube Cholangiogram on 10th postoperative day and assessed carefully. Depending on the study, patients were managed. Patients were advised regarding diet, rest and regular follow up in surgical OPD. Patients who came for regular follow-up were examined in detail, a general physical examination and examination of the abdomen was carried out to note the condition of operative scan and for evidence of tenderness in various regions of abdomen. Patients were advised necessary treatment accordingly. After studying 25 cases, an extensive review of the available literature has been made. All the cases were analysed and the results were tabled.

Results and Discussion

Table 1: Age Incidence

Age group (years)	Frequency	Percentage	Vijay pal study [7]	SK Bhansali study [8]
1 – 10	0	0	0	0
11 – 20	2	8	3	2
21 – 30	3	12	7	9
31 – 40	8	32	26	25
41 – 50	7	28	26	51
51 – 60	4	16	10	47
61 – 70	1	4	3	26
Above 70	0	0	0	11
Total	25	100	75	171

In the present series age of the patient varied from 18 - 65 years. The maximum number of cases were from 4th and 5th decade. This is comparable with the age incidence of Vijay pal and S.K. Bhansali series.

The sex ratio reported by various studies in literature is compared with the present series.

Table 2: Sex incidence

Gender	Frequency	Percentage
Male	7	28
Female	18	72
Total	25	100

Male: Female ratio = 1:2.5

Table 3: Sex Ratio

Studies	Frequency
Present study	1:2.5
Vijay Pal	1:2.4
S.K. Bhansali	3:5

The females out numbered males in all the series including our series

Table 4: Symptoms

Symptoms	Frequency	Present study	Vijay pal study
Pain Rt Hypochondrium	24	96%	84%
Vomiting	8	32%	54%
Dyspepsia	6	24%	34%
Jaundice	4	16%	22%
Fever	8	32%	16%

Table 5: Signs

Symptoms	Frequency	Present study	Vijay pal study [7]
Tenderness Rt Hypochondrium	24	96%	76%
Palpable gallbladder	0	0	68%

Enlarged liver	1	4%	48%
Murphy's sign	5	20%	26%
Icterus	4	16%	22%

The commonest symptom in our series was pain abdomen (96%), followed by vomiting 32%, dyspepsia (24%), Jaundice (16%), fever (32%). This is in comparison with studies of Vijaypal *et al.*

Conclusion

- The peak age incidence was in the age group of 30 - 40yrs.
- In the present series the male to female ratio was 1:2.5.
- Regarding clinical presentation, pain abdomen was the commonest symptom.
- The jaundice and fever, were mainly present in patients with CBD stones.
- Totally the gallbladder stones were commonest compared to CBD stones with gallbladder stones.

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