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ORIGINAL RESEARCH ARTICLE

Correlation of gall stone characteristics with clinico-pathological parameters in patients of cholelithiasis

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Abstract:
Introduction: Gallstone formation results from many complex factors working together. The pathologic factor related to gallstone formation is still the hot debate. In the present study we aim to correlate various gallstone characteristics (number, size, and morphological types,) with clinical indices of cases (Haemoglobin, TLC, DLC, Blood sugar, SGOT, SGPT, Alkaline phosphatase, total serum bilirubin, direct serum bilirubin, Indirect serum bilirubin, total serum protein and albumin values) and also with diabetes mellitus, smoking, tobacco chewing, alcohol intake and dietary habits.
Material and methods: The patients who attended surgical outdoor, casualty department and admitted in the surgical units of GMC Amritsar, whose clinical and radiological diagnosis of Cholelithiasis and eligible for cholecystectomy were considered. Total of 50 cases were observed for this study.
Results: Single stones were present in 15 (30%), double in 6 (12%) and multiple in 29 (58%). In 29 (58%) type of stones was cholesterol, in 9 (18%) pigmented and in 12 (24%) was mixed. Shape of stone was round in 19 (38%), irregular in 15 (30%), facet in 12 (24%) and others in 4 (8%). Out of 50 patients, diabetes mellitus was present in 6 (12%) and absent in 44 (88%).
There was no correlation of HB, TLC, Neutrophils, Lymphocytes, FBS, SGOT, SGPT, bilirubin (T), bilirubin (D), TSP, S. albumin with number of stones (P> 0.05). There was no correlation of HB, TLC, Neutrophils, Lymphocytes, FBS, SGOT, SGPT, bilirubin (T), bilirubin (D), TSP, S. albumin with type of stones (P> 0.05). There was no correlation of HB, TLC, Neutrophils, Lymphocytes, FBS, SGOT, SGPT, bilirubin (T), bilirubin (D), TSP, S. albumin with shape of stones (P> 0.05).
Conclusion: Cholesterol type of gallstones was more common among males and females and association of biochemical indices needs further exploration.
KEYWORDS: Cholelithiasis, Gallstone.

INTRODUCTION

Gallstone disease (cholelithiasis) is one of the most prevalent gastrointestinal diseases, with a substantial burden to health care systems.[1] Although the disease has a low mortality rate, its economic and health impact is significant due to its high morbidity.[2] The clinical presentations of gall stones include acute cholecystitis and febrile illness with pain and tenderness in the right upper quadrant (Murphy Sign). Persistent pain, fever and jaundice may also be present and are collectively known as Charcot's triad and if this triad is associated with septic shock and altered level of consciousness then it is collectively known as Raynaud's pentad. The clinical manifestations of gall stones also include biliary colic, jaundice and acute pancreatitis.[3] Leukocytosis, sepsis,clay-colored stools, fatty food intolerance, chills, nausea and vomiting are also included in clinical presentations of gall stones. General weakness and loss of weight can also be considered as generalized symptoms of gall bladder stones.[4]

Cholecystitis can occur in the very young and very old, but the highest incidence is in the fourth decade. The classic mantra of "female, fat, forty, fertile, and flatulent" often applies.[5] There are two types of stones depending upon their anatomical variations in location: Cholelithiasis and Choledocholithiasis.[6] Clinically gall stones are classified into two types: asymptomatic gall stones and symptomatic gall stones.[7]

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Considering scarcity of studies documenting the clinical profile, treatment provision pattern and the postoperative outcomes among Indian population, the current study was conducted with the aim to correlate various gallstone characteristics (number, size, and morphological types,) with clinical indices of cases (Haemoglobin, TLC, DLC, Blood sugar, SGOT, SGPT, Alkaline phosphatase , total serum bilirubin, direct serum bilirubin, Indirect serum bilirubin , total serum protein and albumin values) and also with diabetes mellitus, smoking, tobacco chewing, alcohol intake and dietary habits.

MATERIAL AND METHOD

The patients who attended surgical outdoor, casualty department and admitted in the surgical units of GMC Amritsar, whose clinical and radiological diagnosis of Cholelithiasis and eligible for cholecystectomy were considered. Total of 50 cases were observed for this study.

EXCLUSION CRITERIA:

Patients with CBD Pancreatitis
Patients with Carcinoma Gall bladder
Patients with Carcinoma/SOL Liver

PERIOD OF STUDY:

One & half years

SCHEME OF STUDY:

Detailed history of all the 50 cases was taken that included information regarding the age, sex, nature of the symptoms, duration of the symptoms, past history of similar complaints, diet history, history of OCP, alcohol and diabetes.

All patients underwent detailed examination, hemogram, electrocardiogram, liver function test, blood sugar, blood urea, serum creatinine, urine analysis, blood group, chest X-ray, and ultrasound scan of the abdomen. Relevant investigations and specialty consultations were taken for patients with associated medical illness and their control was ascertained pre-operatively. Risk and complications of the condition as well as surgery was explained to the patients, written consent was obtained. Appropriate pre-operative antibiotics were given.

The pathological features and anatomical variations were noted, after opening the abdomen, and bile obtained from the gallbladder with a syringe was sent for culture sensitivity.

In this study, all patients undergoing open cholecystectomy were taken. A subhepatic abdominal drain was used in patients who underwenr open cholecystectomy and was connected to a collecting bag. The abdominal wound was closed in layers.

The gallstone, single or multiple, were sent for chemical analysis and the gallbladder for histopathological examination. All patients received antibiotics and routine post-operative care.

Patients were properly examined in the post-operative period to note the development of any complication.

Suitable treatment was given according to the need.

STATISTICAL ANALYSIS:

Data was described in terms of range, mean, +/- standard deviation (SD), frequencies (number of cases), and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups was done using the Student t-test. For comparing categorical data, the Chi-square test was performed and an exact test was used when the expected frequency is less than 5. A probability value (p-value) less than 0.05 was considered statistically significant. AII statistical calculations were done using SPSS 21 (Statistical Package for the Social Science) version statistical program for Microsoft Windows.

OBSERVATION & RESULTS

Age group <30 had 5 (10%), 31-40 years had 15 (30%), 41-50 years had 18 (36%) and 51-60 years had 12 (24%) patients.

Out of 50 patients, males were 15 (30%) and females were 35 (70%).

39 patients had pain abdomen, dyspepsia was present in 32 (64%) patients, nausea was present in 14 (28%) patients, 11 (22%) were vegetarian and 39 (78%) were non- vegetarian. Oral contraceptives were used by 7

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(14%). 9 (18%) had habit of alcohol intake and 41 (82%) had not. 6 (12%) had habit of tobacco intake and 44 (88%) had not.

Single stones were present in 15 (30%), double in 6 (12%) and multiple in 29 (58%). In 29 (58%) type of stones was cholesterol, in 9 (18%) pigmented and in 12 (24%) was mixed. Shape of stone was round in 19 (38%), irregular in 15 (30%), facet in 12 (24%) and others in 4 (8%). Out of 50 patients, diabetes mellitus was present in 6 (12%) and absent in 44 (88%).

TABLE 1 MEAN VALUES

Parameters	Mean	Std. Deviation
AGE	43.14	9.446
HB (g/dl)	11.470000	1.4073060
TLC (per ml)	8910.00	2509.106
N (per mm3)	53.62	15.662
L (per mm3)	37.70	15.630
FBS (mmol/L)	106.86	21.912
SGOT (IU/L)	42.30	12.850
SGPT (IU/L)	55.204000	21.0055480
BILIRUBIN (T) (mg/dL)	.8402	.21205
BILIRUBIN (D) (mg/dL)	.220	.1143
TSP (g/DL)	6.774	.6836
S. ALBUMIN (g/L)	4.327200	.5950923

DISCUSSION

In the present study incidence of gall stone was highest in the age group 41-50 years (36%) followed by 31-40 years (30%), 51-60 years (24%) and <30 (10%). Srivastav AC et al[8] in their study reported that the most commonly involved age group for cholelithiasis was 31-40 years while Pradhan et al[9] reported maximum 32.5% cases belongs to age group 30-39 years. Similar observations were reported by Idris SA et al[10] and Aslam HM et al[11], who observed majority of cases from age group 31-50 years.

In the present study female preponderance was seen with 35 (70%) females and 15 (30%) males, thus holding true the saying that 'a fatty, fertile, flatulent, female of forty is the classical sufferer from symptomatic gallstones.'(B) in the present study the male to female ratio was 1:2.33. Mazlum M et al[12] and Mahajan VR et al[13] also noted that male to female ratio being 1:2.33 and 1:1.91 respectively.

In the present study the most common clinical presentation of patients with gallstone was pain abdomen in 39 (78%) followed by dyspepsia in 32 (64%) patients and nausea was present in 14 (28%) patients. in accordance to our study Mahajan VR et al[13] also reported that the maximum number of patients (98.93%) presented with pain in abdomen followed by vomiting (23.93%) . The symptom of abdominal pain was found to be 100% by Chaterjee A et al[14] and Rahman GA et al[15].

In the present study Out of 50 patients, 11 (22%) were vegetarian and 39 (78%) were non- vegetarian. Non-vegetarians were found to be more commonly involved with cholelithiasis than vegetarians. The exact cause for increase of gallstone in non vegetarian cannot be stated however it could be due to the consumption of high protein and fat. The findings were similar with the findings in a study done by Srivastav AC et al[8] and Pradhan SB et al[9], who also reported increase incidence of gallstones in non- vegetarian as compared to vegetarians.

Out of 50 patients, Oral contraceptives were used by 7 (14%). Out of 50 patients, 9 (18%) had habit of alcohol intake and 41 (82%) had not. Out of 50 patients, 6 (12%) had habit of tobacco intake and 44 (88%) had not. Out of 50 patients, diabetes mellitus was present in 6 (12%) and absent in 44 (88%). In present study, the incidence of Diabetes, Alcoholism, smoking, Tobacco chewing, Dietary habits in cases do not predispose to either type of gallstone formation. These findings are similar with the results of Weerakoon H et al[16] and Sherlock S[17].

In 29 (58%) type of stones was cholesterol, in 9 (18%) pigmented and in 12 (24%) was mixed. In the study done by Srivastav AC et al[8] and Pradhan SB et al[9] maximum percentage of cases had mixed type of

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gallstones followed in decreasing frequency by cholesterol combined and pigment type gallstones. Idris SA et al[10] reported in their study that maximum 51.1% cases had pigment stone.
Number of stones, were single in 15 (30%), double in 6 (12%) and multiple in 29 (58%). Srivastav AC et al[8] reported that the Maximum number of cases of gall bladder lesions are associated with multiple gallstones in 277 (70.31%), followed by single calculous in 85 (21.58%), double calculi in 32 (8.13%).
There was no correlation of HB, TLC, Neutrophils, Lymphocytes, FBS, SGOT, SGPT, bilirubin (T), bilirubin (D), TSP, S. albumin with number of stones (P> 0.05). There was no correlation of HB, TLC, Neutrophils, Lymphocytes, FBS, SGOT, SGPT, bilirubin (T), bilirubin (D), TSP, S. albumin with type of stones (P> 0.05). There was no correlation of HB, TLC, Neutrophils, Lymphocytes, FBS, SGOT, SGPT, bilirubin (T), bilirubin (D), TSP, S. albumin with shape of stones (P> 0.05).
Hence, the above mentioned discussion leads to conclusion that these stones can be prevented by avoiding high carbohydrate and fatty diet. Management of gall stones depends upon presenting symptoms.[18,19]
Patients presenting with acute pain are managed with NSAIDs and anti-spasmodic drugs. Ursodeoxycholic acid is considered to be very effective in preventing gall stones. A prospective study conducted on randomized patients revealed that frequency of gall stones formation significantly reduced with the using of ursodeoxycholic acid. While, in Asia cholecystectomy is standard surgical treatment for gall stones, as it involves low risk of recurrence.[20]

CONCLUSION

Cholesterol type of gallstones were more common among males and females and association of biochemical indices needs further exploration. Therefore gender, ethnicity and other clinical features can be used as the factor to predict the formation of gallstones disease. It is also recommended that all patients should go through the analysis of all the biochemical parameters before cholecystectomy. Health care practitioners at various levels need to have a good understanding of varied clinical presentation of acute cholecystitis and different management options, their advantages, and disadvantages to be able to treat the condition effectively. In day-to-day practice, specialization and preference of the physician at first patient contact and country-specific treatment protocol seem to influence the approach.

References

1. Reshetnyak VI. Concept of the pathogenesis and treatment of cholelithiasis. World J Hepatol. 2012 Feb 27;4(2):18-34.
2. Gill GK, Kaur P. Evaluation of liver and lipid parameters in cholelithiasis. Asian j pharm clin res. 2019;12(9):64-7.
3. Heaton KW, Braddon FEM, Mountford RA, Hughes AO, Emmett PM. Symptomatic and silent gallstones in the community. Gut. 1991;32(3):316-20.
4. Chiapponi C, Wirth S, Siebeck M. Acute gallbladder perforation with gallstones spillage in a cirrhotic patient. World J Emerg Surg. 2010 Dec;5(1):11.
5. Conte D, Fraquelli M, Giunta M, Conti CB. Gallstones and liver disease: an overview. J Gastrointestin Liver Dis. 2011;20:9–11.
6. Iqbal MN, Iqbal MA, Javaid R, Abbas MW. Gall stones: a fundamental clinical review. Int J Res Med Sci 2019;7:2869-74.
7. Beckingham IJ. Gallstone disease. Br Med J. 2001;322(7278):91-4.
8. Srivastav AC, Srivastava M, Paswan R. Spectrum of clinico-pathological presentations of gall bladder diseases in eastern UP. International Journal of Contemporary Medicine Surgery and Radiology. 2019;4(1):A18-A23.
9. Pradhan SB, Joshi MR, Vaidya A. Prevalence of different type of gallstone in the patients with cholelithiasis at Kathmandu Medical College, Nepal. Kathmandu University Medical Journal. 2009; 7(3):268-71.
10. Idris SA, Shalayel MHF, Elsidding KE, Hamza AA, Hafiz MM.Prevalence of different types of gallstone in relation to age in Sudan. Sch. J. App. Med. Sci. 2013; 1 (6): 664-67.
11. Aslam HM, Saleem S, Edhi MM, Shaikh HA, Khan JD, Hafiz M et al.; Assessment of gallstone predictor: comparative analysis of ultrasonographic and biochemical parameters. International Archives of Medicine, 2013; 6(1):17.
12. Mazlum M, Dilek FH, Yener AN, et al. Profile of gallbladder diseases diagnosed at AfyonKocatepe University: a retrospective study. Turk Patoloji Derg.2011 Jan;27(1):23-30.
13. Mahajan VR, Jawarkar AV, Hiwale BN. Clinicopathological profile of cholecystectomy specimens-a retrospective and prospective study. Trop J Path Micro 2018; 4(6):455-465.
14. Chatterjee A, Banerjee P. Evaluation of cholecystitis in young patients-its incidence, etiology and treatment. Indian Journal of Surgery. 1989 Jul;51(7): 293-295.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

15. Rahman GA. Cholelithiasis and cholecystitis: changing prevalence in an African community. Journal Of National Medical Association. 2005 Nov; 97 (11):1534-1538.
16. Weerakoon H, Ranashinge S, Navaratna A, Sivakanesan A, Galketiya KB, Rosairo S. Can the type of gallstone be predicted with known possible risk factors?: A comparison between mixed cholesterol and black pigment stones. Gastroenterology. 2014; 14:88.
17. Sherlock S. Diseases of liver and biliary tract, 4th Edition, 1968, Blackwell, Oxford, London
18. Tsai CJ, Leitzmann MF, Willett WC, Giovannucci EL. The effect of long-term intake of cis unsaturated fats on the risk for gallstone disease in men: a prospective cohort study. Ann Intern Med. 2004;141(7):514-22.
19. Leitzmann MF, Rimm EB, Willett WC, Spiegelman D, Grodstein F, Stampfer MJ, et al. Recreational physical activity and the risk of cholecystectomy in women. N Engl J Med. 1999;341(11):777-84.
20. Berger MY, Olde Hartman TC, Bohnen AM. Abdominal symptoms: do they disappear after cholecystectomy? Surg Endosc. 2003;17(11):1723-8