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Original Research

Assessment Of Correlation Of Type Of Gallstones With The Type Of Mucosal Response In Patients Undergoing Laparoscopic Cholecystectomy

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ABSTRACT

Background: Gallstones are hardened deposits of the digestive fluid bile that can form within the gallbladder. The gallbladder mucus plays a regulatory role in cholelithiasis as it promotes the nucleation of stones. Mucus, calcium and lipids act in concert to form the gallstones. Hence; we planned the present study to assess various gallstone characteristics with the type of mucosal response in gall bladder. **Materials & methods:** The present study included assessment of various gallstone characteristics with the type of mucosal response in gall bladder. A total of 30 patients scheduled to undergo laparoscopic cholecystectomy (LC) were included in the present study. LC was done in all the patients. The following features were noted on gross examination of gallbladder: dimensions, outer surface, wall thickness and mucosa. The gall stones (received either in the specimen or the container) were assessed for various parameters i.e. number, size and morphologic type. All the results were compiled and analysed by SPSS software. **Results:** Mixed type of gallstone was the predominant type of gallstones observed in present study. We didn't observe any significant difference while assessing the association of mucosal response of mucosa with the type of gallstones.

Conclusion: No correlation is observed in between the mucosal response of mucosa with the type of gallstones.

Key words: Gallstones, Laparoscopic cholecystectomy

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INTRODUCTION

Gallstones are hardened deposits of the digestive fluid bile that can form within the gallbladder. They vary in size and shape from as small as a grain of sand to as large as a golf ball. Gallstones occur when there is an imbalance in the chemical constituents of bile that result in precipitation of one or more of the components.^{1,2} This disorder is usually diagnosed by history of recurrent episodes of right-upper-quadrant or epigastric pain, suggesting biliary colic and Boas' sign. The gallbladder mucus plays a regulatory role in cholelithiasis as it promotes the nucleation of stones. Mucus, calcium and lipids act in concert to form the gallstones.³⁻⁵

Hence; we planned the present study to assess various gallstone characteristics with the type of mucosal response in gall bladder.

MATERIALS & METHODS

The present study was planned in the department of surgery and it included assessment of various gallstone characteristics with the

type of mucosal response in gall bladder. Written consent was obtained after explaining in detail the entire research protocol. A total of 30 patients scheduled to undergo laparoscopic cholecystectomy (LC) were included in the present study. LC was done in all the patients. The following features were noted on gross examination of gallbladder: dimensions, outer surface, wall thickness and mucosa. The gall stones (received either in the specimen or the container) were assessed for various parameters i.e. number, size and morphologic type. All the sections were stained by H and E stain. Morphological characteristics of the gall stones⁶:-

- Cholesterol: solitary, oval, large, yellow, white. Cut section – radiating glistening crystals.
- Pigment: multiple, small, jet black, mulberry shaped. Cut section – soft and black.
- Mixed: multiple, multifaceted, variable size. Cut section–laminated alternating dark pigment layer and pale white layer.

- Combined: usually solitary, large smooth. Cut section – central nucleus of pure gallstone with mixed outer shell or vice versa.

All the results were compiled and analysed by SPSS software. Chi-square test was used for assessment of level of significance.

RESULTS

Among these 30 patients, 18 were males while the remaining 12 were females. Mixed type of gallstone was the predominant type of gallstones observed in present study. We didn't observe any significant difference while assessing the association of mucosal response of mucosa with the type of gallstones.

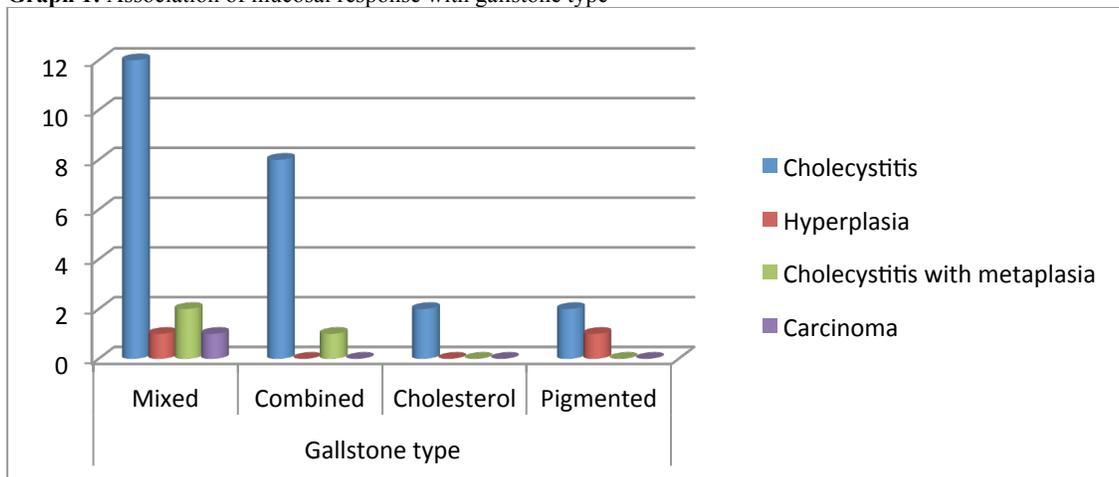
Table 1: Distribution of subjects according to type of stone

Type	Number
Mixed	16
Combined	9
Cholesterol	2
Pigment	3
Total	30

Table 2: Association of mucosal response with gallstone type

Diagnosis	Gallstone type				Total	Chi-square value	P-value
	Mixed	Combined	Cholesterol	Pigmented			
Cholecystitis	12	8	2	2	24	2.463	0.982
Hyperplasia	1	0	0	1	2		
Cholecystitis with metaplasia	2	1	0	0	3		
Carcinoma	1	0	0	0	1		
Total	16	9	2	3	30		

Graph 1: Association of mucosal response with gallstone type



DISCUSSION

A total of 30 gallstone patients scheduled to undergo LC were included in the present study. Mean age of the patients of the present study was 45.6years. Among these 30 patients, 18 were

males while the remaining 12 were females. Mixed type of gallstone was the predominant type of gallstones observed in present study. We didn't observe any significant difference while assessing the association of mucosal response of mucosa with the type of gallstones. Yaylak F et al (2016) evaluated age-related

histopathological gallbladder morphometric measurements. A retrospective chart review of 371 cholecystectomy materials was performed. Two groups were designed according to age (<65 and ≥65 years old, respectively). Age and gender analyses for histopathological gallbladder length, diameter and wall thickness were performed. In addition, pathologically confirmed acute inflammation rates were evaluated in this case-control study. Gallbladder morphometric measurements and pathologically confirmed acute inflammation rates were similar in males and females. Histopathological gallbladder diameter was higher with acute inflammatory changes, but no differences were observed in gallbladder length and wall thickness. Gallbladder wall thickness and pathologically confirmed acute inflammation rates were not comparable between the control and geriatric patients (2.8 ± 1.3 vs 2.6 ± 1.2 mm, and 30/281 (10.7 %) vs 10/74 (13.5 %), respectively, $p > 0.05$). However, higher gallbladder length and diameter were observed in geriatric group. Age is an independent factor on histopathological gallbladder length and diameter, but not for gallbladder wall thickness. In addition, pathologically confirmed acute inflammation rate is not higher in geriatric patients.⁷

Wrenn SM et al (2017) reviewed the pathology results from gallbladder specimens sent for routine pathology, determine the incidence of iGBC in our population, and determine whether surgeons need to send specimens for further analysis if no preoperative or intraoperative suspicion for malignancy is present. They performed a large single-center case-controlled retrospective study of all gallbladder specimens sent for routine histopathological analysis between 2009 and 2014. The results were tabulated, including both common and rare findings. We then analyzed patient outcomes and survival for the case group of iGBC patients and determined value in life years (LY) gained per dollar spent on pathological screening. A total of 2153 pathology reports were reviewed. After exclusion criteria, a total of 1984 were included in data analysis. The incidence of iGBC was 0.25 % (95 % CI 0.08, 0.59), and dysplasia was 0.70 % (0.39, 1.20). The most common pathological findings included chronic cholecystitis in 89 % (87.4, 90.3) and cholelithiasis in 81 % (79.1, 82.6) of specimens. Total charges for pathological screening were \$65,404 per LY to date; however, two patients have ongoing disease-free survival and this figure is expected to decrease. The incidence of significant pathology necessitating change in clinical management is extremely low in our population. Despite this, the cost per LY gained from routine pathological analysis appears to be of sufficient value to continue with current practice.⁸ Pillai V et al (2017) analysed the histopathological changes in gallstone disease and to study the clinical and biochemical factors that are seen in gall stone disease. 108 patients admitted with diagnosis of cholelithiasis and posted for cholecystectomy were studied. 63% of the patients were females with a female to male ratio of 1.7:1. Of the group, 64.8% had a BMI between 25 and 29.9. 65.7% patients got operated within one year of the onset of symptoms. Serum cholesterol levels were found elevated in majority of patients. 61% patients had multiple gall stones. 62% had stones composed of cholesterol, bilirubin, calcium carbonate and calcium oxalate. 102 out of the 108 specimens showed histological features of chronic cholecystitis only. One case showed a premalignant

change in the form of pyloric metaplasia. Cholelithiasis is seen mostly in females, most of them having elevated cholesterol levels. The commonest histopathological change associated with cholelithiasis is chronic cholecystitis. Premalignant lesions are seen only in a small minority only. Hence early elective cholecystectomy can prevent malignant transformation in asymptomatic gall stones.⁹

CONCLUSION

Gallstones represent a common problem these days. No correlation is observed in between the mucosal response of mucosa with the type of gallstones. However; further studies are recommended.

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