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Original Research

Assessment of Gall Bladder Mucosal Changes in Gall Stone Patients

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ABSTRACT

Background: Gallstone disease produces diverse histopathological changes in gallbladder mucosa-namely, acute inflammation, chronic Inflammation, granulomatous inflammation, hyperplasia, cholesterolosis, dysplasia and carcinoma. Under the light of above evidence; we planned the present study to assess gall bladder mucosal changes in gall stone patients. **Materials & methods:** A total of 50 gallstone patients were enrolled in the present study. Laparoscopic cholecystectomy was performed in all the patients and gallbladder mucosal samples were sent for histopathologic analysis. The tissue was properly sampled and processed by routine histological techniques for paraffin embedding and sectioning at 4 micron thickness. Four sections including entire wall were obtained: two from body, one each from fundus and neck of the gall bladder. Additional sections were taken from abnormal mucosa. **Results:** Among 50 patients in the present study, chronic cholecystitis was the diagnosis in 40 patients (80 percent of the patients), while pre-invasive and invasive diagnosis was seen in 8 patients (16 percent of the patients) and 2 patients (4 percent of the patients) respectively. Mean size of stone in the cholecystitis patients was 0.68 cm, while mean size of stone in pre-invasive and invasive patients was found to be 1.19 cm and 3.98 cm. Significant results were obtained while assessing the correlation of size of gallstones with gallbladder mucosal response. **Conclusion:** Identification of premalignant modifications in the morphologic background of chronic cholecystitis is an argument in favor of the metaplasia-dysplasia-neoplasia sequence. However; further studies are recommended.

Key words: Gallbladder, Invasive, Mucosal

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INTRODUCTION

Gallstone disease is a worldwide medical problem, but the incidence rates show substantial geographical variation, with the lowest rates reported in African populations. 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.[1-3]

For practical purpose gallbladder disease can be equated with gallstones as these are present in the large majority of patients. Most patients with gallstones have no symptoms. These gallstones are called “silent stones” and may not require treatment.[4]

Gallstone disease produces diverse histopathological changes in gallbladder mucosa-namely, acute inflammation, chronic Inflammation, granulomatous inflammation, hyperplasia, cholesterolosis, dysplasia and carcinoma. 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.[5]

Under the light of above evidence; we planned the present study to assess gall bladder mucosal changes in gall stone patients.

MATERIALS & METHODS

The present study was conducted in the department of general pathology of the medical institute and it included assessment of the gall bladder mucosal changes in gall stone patients. Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 50 gallstone patients were enrolled in

the present study. Laparoscopic cholecystectomy was performed in all the patients and gallbladder mucosal samples were sent for histopathologic analysis. The tissue was properly sampled and processed by routine histological techniques for paraffin embedding and sectioning at 4 micron thickness. Four sections including entire wall were obtained: two from body, one each from fundus and neck of the gall bladder. Additional sections were taken from abnormal mucosa. All the results were analysed by SPSS software. Assessment of results was done by using Analysis of Variance (ANOVA). P- Value of less than 0.05 was taken as significant.

RESULTS

In the present study, a total of 50 patients were analysed. Among these 50 patients, 15 patients belonged to the age group of 40 to 49 years. Mean age of the patients of the present study was 45.6 years. Among 50 patients in the present study, chronic cholecystitis was the diagnosis in 40 patients (80 percent of the patients), while pre-invasive and invasive diagnosis was seen in 8 patients (16 percent of the patients) and 2 patients (4 percent of the patients) respectively. Mean size of stone in the cholecystitis patients was 0.68 cm, while mean size of stone in pre-invasive and invasive patients was found to be 1.19 cm and 3.98 cm. Significant results were obtained while assessing the correlation of size of gallstones with gallbladder mucosal response.

Table 1: Distribution of subjects according to age group

Age group	Frequency	Percent
<30	8	16
30-39	11	22
40-49	15	30
50-59	8	16
>60	8	16
Total	50	100

Table 2: Distribution of subjects according to various mucosal responses

Mucosal response	Frequency	Percent
Chronic cholecystitis	40	80
Pre-invasive	8	16
Invasive	2	4
Total	50	100

Table 3: Association of mucosal response with gallstone size

Diagnosis	**Mean size of stone (cm)**	**p- value**
Cholecystitis	0.68	0.000(S)
Pre-invasive	1.19	
Invasive	3.98	

DISCUSSION

Certain populations are far more prone than others to develop gallstones. The following applies to cholesterol gallstones. The prevalence rate of cholesterol gallstones approach 75% in native Americans of the first migration from Asia. Gallstones exhibit prevalence rates of around 25% in industrialized societies but are uncommon in underdeveloped or developing societies. The prevalence of gallstones increases throughout life and in women is about twice as in men.[4, 5]

Carcinoma (CA) of the gallbladder is more frequent in females than male (3 to 4:1 ratio); over 90% of the patients are 50 years of age or older at the time of diagnosis. It is more common in some Latin American countries than in Unites States. The incidence is high in Americans Indians, respectively low in whites of European extraction, and very rare in blacks. In Europe, the rate is very high in Germany and surrounding central countries, low in Mediterranean countries, and low and declining in Britain and Ireland.[6, 7]

In the present study, a total of 50 patients were analysed. Among these 50 patients, 15 patients belonged to the age group of 40 to 49 years. Mean age of the patients of the present study was 45.6 years. Among 50 patients in the present study, chronic cholecystitis was the diagnosis in 40 patients (80 percent of the patients), while pre-invasive and invasive diagnosis was seen in 8 patients (16 percent of the patients) and 2 patients (4 percent of the patients) respectively. Gall bladder carcinoma (GBC) is a relatively uncommon neoplasm that shows female predominance, possibly related to the increased incidence of calculi in women. Size of the gallstones may also be a risk factor, as patients with stones larger than 3 cm have a significantly greater risk of developing carcinoma. Histologically, most GBC are pancreatobiliary-type adenocarcinomas, showing variable degrees of differentiation. Some arise in association with a noninvasive papillary neoplasm.[6, 7]

Additional, several histologic variants of adenocarcinoma are recognized: papillary, intestinal, mucinous, signet-ring cell and clear cell. Many tumors contain more than one histologic variant. The remaining epithelial cell types occurring in the gallbladder include adenosquamous carcinoma, squamous cell carcinoma, small cell carcinoma, and undifferentiated carcinoma. The determination of the histological type of the tumor and differential diagnosis from gallbladder adenocarcinoma are often difficult. Failure to detect early disease contributes to a generally poor prognosis.[8]

Singh A et al assessed the correlation between various gallstone characteristics. 100 patients undergoing cholecystectomy for symptomatic cholecystitis were analyzed. Gallstones were assessed for various parameters, i.e., number, size, and morphological type. Gallbladder mucosa was subjected to histopathological examination. Sections were taken from body, fundus, and neck of gallbladder. Of 100 cases, maximum type was of mixed stones (54%) and was multiple in number (46%). However, gallstone type and number are nonsignificant variables to produce precancerous lesions (i.e., hyperplasia and metaplasia). Statistically significant results were obtained while comparing the mucosal response with gallstone size (P = 0.012). As the gallstone size increases, the response in gallbladder mucosa

changes from cholecystitis, hyperplasia, and metaplasia to carcinoma.[9]

In the present study, mean size of stone in the cholecystitis patients was 0.68 cm, while mean size of stone in pre-invasive and invasive patients was found to be 1.19 cm and 3.98 cm. Significant results were obtained while assessing the correlation of size of gallstones with gallbladder mucosal response. Srinivasan G et al quantified the various outcomes of routine gallbladder examination following cholecystectomy procedure. The Study period of this study was from August 2017 to August 2018. Three sections each from neck, body and fundus taken. Tissues were processed in automated tissue processor and paraffin blocks made. Total number of specimens received was 36. And among the cases the number of females were 33 and the number of males were 3. The number of cases of calculous cholecystitis was 31 and the number of cases with pigment stones was 26, number of cases with cholesterol stone was 2 and the number of cases with mixed stones was 3. The number of cases of acalculous cholecystitis was 5. The predominant histomorphological pattern seen in this study group is chronic calculous cholecystitis.[10]

CONCLUSION

Under the light of above obtained results, the authors conclude thatidentification of premalignant modifications in the morphologic background of chronic cholecystitis is an argument in favor of the metaplasia-dysplasia-neoplasia sequence. However; further studies are recommended.

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