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Original Research

Assessment of histopathological changes in gallbladder mucosa associated with cholelithiasis

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ABSTRACT:

Aim: To assess mucosal response in gall bladder in relation to gall stone disease. **Materials & methods:** The present study included histopathological examination of 100 gall stone patients who underwent cholecystectomy. 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. The hematoxylin and eosin (H & E) stained sections were systematically examined and the pattern of response in the gallbladder mucosa such as type of inflammation, cholesterolosis, mucocele, hyperplasia, metaplasia, dysplasia and malignant changes was studied. All the results were analysed by SPSS software. **Results:** Histopathologic diagnosis was chronic calculus cholecystitis in 92 percent of the patients. Hyperplastic polyp with chronic cholecystitis and Follicular cholecystitis were the histopathologic diagnosis in 1 patient each. Malignancy was found to be present in 6 percent of the patients. **Conclusion:** A definite epidemiologic parallel exists between gallbladder carcinoma and cholelithiasis, but the pathologenetic relationship between them remains obscure.

Key words: Histopathological, Gallstone, Gallbladder

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INTRODUCTION

Gallbladder is an accessory organ of the digestive tract, storing and concentrating bile between meals. In response to feeding, the gallbladder contracts and releases bile into the small intestine. Bile acids thus enter the intestinal lumen and facilitate the absorption of dietary lipids. 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.^{1,2}

Gallstones are becoming increasingly common; they are seen in all age groups, but the incidence increases with age; and about a quarter of women over 60 years will develop them.Gallstone disease produces diverse histopathological changes in gallbladder mucosanamely, 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.^{3, 4} Under the light of above evidence; we planned the present study to assess mucosal response in gall bladder in relation to gall stone disease.

MATERIALS & METHODS

The present study was conducted to assess mucosal response in gall bladder in relation to gall stone disease. 100 Cholecystectomy patients were enrolled. The present study included histopathological examination of 100 gall stone patients who underwent cholecystectomy. 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. The hematoxylin and eosin (H & E) stained sections were systematically

examined and the pattern of response in the gallbladder mucosa such as type of inflammation, cholesterolosis, mucocele, hyperplasia, metaplasia, dysplasia and malignant changes was studied. All the results were analysed by SPSS software.

RESULTS

Mean age of the patients was 41.9 years. 82 percent of the patients (82 patients) were females, while the remaining 18 percent of the patients (18 patients) were males.Histopathologic diagnosis was chronic calculus cholecystitis in 92 percent of the patients. Hyperplastic polyp with chronic cholecystitis and Follicular cholecystitis were the histopathologic diagnosis in 1 patient each. Malignancy was found to be present in 6 percent of the patients.

Table 1: Distribution of cases according tohistopathologic diagnosis

Diagnosis	Frequency	Percentage
Chronic calculus	92	92
cholecystitis		
Hyperplastic polyp	1	1
with chronic		
cholecystitis		
Follicular cholecystitis	1	1
Malignancy	6	6
Total	100	100

DISCUSSION

The prevalence of cholesterol gallstones approach 75% in native Americans. Gallstones exhibit rates of around 25% in industrialized societies, but are common in underdeveloped or developing societies. The prevalence increases throughout the life. Gall stone disease is ubiquitous in the United States, affecting approximately 10% to 20% of the population. That gall stones are frequently found at autopsy of subjects who have apparently gone through life indicates that many people have gall stones without ever becoming aware of it.

Mean age of the patients was 41.9 years. 82 percent of the patients (82 patients) were females, while the remaining 18 percent of the patients (18 patients) were males. Histopathologic diagnosis was chronic calculus cholecystitis in 92 percent of the patients. Hyperplastic polyp with chronic cholecystitis and Follicular cholecystitis were the histopathologic diagnosis in 1 patient each. Malignancy was found to be present in 6 percent of the patients.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 minority only. Hence early small elective cholecystectomy can prevent malignant transformation in asymptomatic gall stones.¹⁰

Mathur SK et al correlated various gallstone characteristics (number, size, weight, volume and morphological type) with the type of mucosal response in gall bladder (inflammation, hyperplasia, metaplasia and carcinoma). The study was conducted on 330 open cholecystectomy specimens with complete gallstones. Out of the 330 cases, 194 (59%) had mixed stones, 84 (25%) combined, 30 (9%) pigment and 22 (7%) had cholesterol stones. Number of stones varied from a single calculus in 131 (39.6%) cases, double in 29 (8.8%) and multiple in the remaining 170 (51.6%) cases. Cholecystitis, hyperplasia, metaplasia and carcinoma were more commonly seen with mixed and multiple stones. The average weight of calculi in cholecystitis was 2.551 gm, in hyperplasia 3.619 gm, metaplasia4.549 gm and 17.96 gm in cases with carcinoma. Similarly, average volume of the stone(s) was 2.664 ml in cholecystitis, 3.742 ml in hyperplasia, 4.532 ml in metaplasia and 19.178 ml in carcinoma. The average calculus size (2.147 cm) was found to be maximum in cases with carcinoma, followed by hyperplasia (1.187 cm), metaplasia (1.145 cm) and cholecystitis (1.136 cm).As the weight, volume and size of the stone increases the changes in the gall bladder mucosa changes from cholecystitis, hyperplasia, metaplasia, dysplasia, to carcinoma.11

CONCLUSION

A definite epidemiologic parallel exists between gallbladder carcinoma and cholelithiasis, but the pathologenetic relationship between them remains obscure.

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