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Histopathological assessment of gallbladder mucosa among gallstone patients

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Abstract

Background: The present study was conducted for carrying out histopathological assessment of gallbladder mucosa among gallstone patients.

Materials & methods: 100 gallstone patients were enrolled. Gross examination of size of gallstones was done. The gallbladder mucosal tissue was properly sampled and processed by routine histological techniques by hematoxylin and eosin staining of the sections. The various morphological responses were then categorized into four broad categories – cholecystitis, hyperplasia, metaplasia, and carcinoma.

Results: Chronic cholecystitis was the diagnosis in 81 percent of the patients while chronic cholecystitis with hyperplasia was the diagnosis in 11 percent of the patients. Chronic cholecystitis with metaplasia was the diagnosis in 5 percent of the patients while papillary carcinoma was the diagnosis in 3 percent of the patients. While assessing the correlation of histopathologic diagnosis with gallstone size, significant results were obtained.

Conclusion: As the gallstone size increases, the reaction in the gallbladder mucosa changes from cholecystitis, hyperplasia, and metaplasia to carcinoma. Chronic cholecystitis is the most common histopathological diagnosis and 3 % patients had incidental Gall bladder carcinoma

Key words: Gall bladder, Gallstones, Histopathological

INTRODUCTION

Cholelithiasis or gallstones are concretions of precipitated components of bile that can form in the gallbladder. Prevalence of cholelithiasis is 10-20 % in the western population (1) and 3-6 % in India.(2) The prevalence of gallbladder stones varies widely in different communities in India, the North Indians having 2-4 fold higher prevalence as compared with those among South Indians. Furthermore, there is a predominance of cholesterol gallstones among the North Indians whereas pigment gallstones is more prevalent in south India. (2)

Almost 80 % of patients with gall stone disease remain asymptomatic. In patients with asymptomatic gallstones discovered incidentally, the likelihood of developing symptoms or complications is 1% to 2% per year. Asymptomatic gallbladder stones found in a normal

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gallbladder and normal biliary tree do not need treatment unless they develop symptoms.[1- 3] Patients with symptomatic stones most often present with recurrent episodes of right-upper-quadrant or epigastric pain, probably related to the impaction of a stone in the cystic duct. They may experience intense pain in the upper-right side of the abdomen, often accompanied by nausea and vomiting, that steadily increases for approximately 30 min to several hours. Histopathological changes induced by gall stone disease or cholelithiasis is diverse. Few examples are acute inflammation, chronic inflammation, glandular hyperplasia, granulomatous inflammation, cholesterosis, dysplasia and carcinoma. Components of gall stones are different. Few examples are cholesterol, pigment or mixed stones.[4- 6] Hence; the present study was conducted for carrying out histopathological assessment of gallbladder mucosa among gallstone patients.

MATERIALS & METHODS

The present study was conducted for carrying out histopathological assessment of gallbladder mucosa among gallstone patients. 100 gallstone patients were enrolled. Gross examination of size of gallstones was done. The gallbladder mucosal tissue was properly sampled and processed by routine histological techniques by hematoxylin and eosin staining of the sections. The various morphological responses were then categorized into four broad categories – cholecystitis, hyperplasia, metaplasia, and carcinoma. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. Chi-square test and ANOVA were used for evaluation of level of significance.

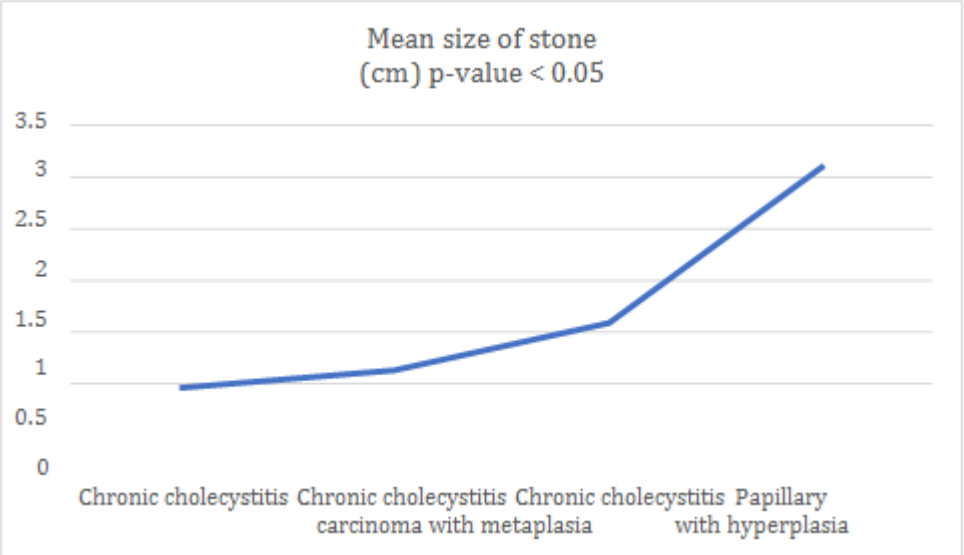
RESULTS

Total of 100 patients were analysed. Mean age of the patients was 46.3 years. 81 percent of the patients were males while the remaining were females. On histopathologic examination, chronic cholecystitis was the diagnosis in 81 percent of the patients while chronic cholecystitis with hyperplasia was the diagnosis in 11 percent of the patients. Chronic cholecystitis with metaplasia was the diagnosis in 5 percent of the patients while papillary carcinoma was the diagnosis in 3 percent of the patients. Mean stone size among patients with chronic cholecystitis, chronic cholecystitis with metaplasia, chronic cholecystitis with hyperplasia and papillary carcinoma was 0.96 cm, 1.13 cm, 1.59 cm and 3.12 cm respectively. While assessing the correlation of histopathologic diagnosis with gallstone size, significant results were obtained. However; while correlating the histopathological diagnosis with gallstone type (mixed, combined, cholesterol and pigmented), non-significant results were obtained.

Table 1: Gallbladder mucosal responses on histopathology

Histopathologic examination	Number	Percentage
Chronic cholecystitis	81	81
Chronic cholecystitis with hyperplasia	11	11
Chronic cholecystitis with metaplasia	5	5

Papillary carcinoma	3	3
Total	100	100



Graph 1: Corelation of histopathological diagnosis with gallstone size

DISCUSSION

Gallstones or cholelithiasis are responsible for one of the most commonly encountered digestive disorders in India. They are considered a disease of developed populations but are present around the world. It is both the result of a chronic disease process and the cause of subsequent acute disorders of the pancreatic, biliary, hepatic, and gastrointestinal tract. Most patients with gallstones are asymptomatic, but 10% of patients will develop symptoms within five years, and 20% of patients will develop symptoms within 20 years of diagnosing gallstones. Gallstone prevalence also increases with age. Over one-quarter of females older than the age of 60 will have gallstones. Gallstones have various compositions and etiologies.[7-9] Hence; the present study was conducted for carrying out histopathological assessment of gallbladder mucosa among gallstone patients.

In the present study, a total of 100 patients were analysed. Mean age of the patients was 46.3 years. 81 percent of the patients were males while the remaining were females. In a similar study conducted by Singh A et al, majority proportion of patients belonged to the age group of 40 to 49 years with 85 percent of the patients being female population.[10]

In the present study, on histopathologic examination, chronic cholecystitis was the diagnosis in 81 percent of the patients while chronic cholecystitis with hyperplasia was the diagnosis in

11 percent of the patients. Chronic cholecystitis with metaplasia was the diagnosis in 5 percent of the patients while papillary carcinoma was the diagnosis in 3 percent of the patients. Our results were in concordance with the results obtained by previous authors who also reported similar findings. In a previous study conducted by Harpreet Singh et al, in majority (76%) cases, cholecystitis was found. Hyperplasia was seen in 10% patients. Cholecystitis with metaplasia in 10 percent of the cases and carcinoma in 2 percent of the cases.[11]

In the present study, mean stone size among patients with chronic cholecystitis, chronic cholecystitis with metaplasia, chronic cholecystitis with hyperplasia and papillary carcinoma was 0.96 cm, 1.13 cm, 1.59 cm and 3.12 cm respectively. While assessing the correlation of histopathologic diagnosis with gallstone size, significant results were obtained. However; while correlating the histopathological diagnosis with gallstone type (mixed, combined, cholesterol and pigmented), non-significant results were obtained. Our results were in concordance with the results obtained by Singh A et al who also reported similar findings. In their study also, authors reported significant correlation of histopathologic diagnosis with gallstone size. In a study conducted by Mathur SK et al, 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).[12] Baig SJ et al, in another previous study reported that histopathological changes in gallbladder mucosa in cholelithiasis: correlation with chemical composition of gallstones. Out of 40 patients (n = 40) 29 were females and 11 were males. The mean age of our patients was 38 +/- 21 years with a median of 40 years. Median age of males was 48 years compared to 38 years for females. Twenty-eight patients had mixed stones, 8 had pigment stones and 4 had cholesterol stones. Out of 28 patients with mixed stones 14 had histological picture of chronic cholecystitis, 8 had granulomatous cholecystitis, 4 had adenomatous hyperplasia, 1 had dysplasia and 1 had carcinoma.[13] In another similar study conducted by Csendes A et al, authors determined the histological appearance of gallbladder mucosa in 95 control subjects and in 80 patients with asymptomatic gallstones Among controls, 33% showed abnormal histological findings, mainly chronic cholecystitis, which increased with age and was frequently seen among women. All patients with asymptomatic gallstones showed chronic cholecystitis and/or cholesterolosis, and 5% showed acute inflammatory changes. In 55% of them a single stone was found. These findings suggest that chronic inflammatory changes can occur in the gallbladder mucosa prior to the appearance of macroscopic stones at the gallbladder.[14]

CONCLUSION

From the above results, the authors conclude that as the gallstone size increases, the reaction in the gallbladder mucosa changes from cholecystitis, hyperplasia, and metaplasia to carcinoma. Chronic cholecystitis is the most common histopathological diagnosis and 3 % patients had incidental Gall bladder carcinoma. Therefore, histopathological examination of all gallstone patients should be carried out very thoroughly.

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