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HISTOPATHOLOGICAL CHANGES IN GALLBLADDER MUCOSA ASSOCIATED WITH CHOLELITHIASIS

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ABSTRACT

Background: Gallstone disease called as cholelithiasis is the most common digestive surgical disorder and account for an important part of health care expenditure. **Aim:** This work was carried out to study the diverse histopathological changes in the gallbladder mucosa as a result of cholelithiasis.

Materials and Methods: This was a retrospective study carried out in the Department of Pathology, Dr. Hedgewar Arogya Sansthan Hospital during a period of 1 year. The study included 184 cases of cholecystectomy specimens. **Results:** There was a preponderance of females (M : F ratio 1: 1.5). The age of the patients varied from 23 to 76 years with a mean age of 47 years. On macroscopic examination, the serosal surface of the gallbladder was found normal in 126 specimens (68.48%) and congested in 58 specimens (31.52%). Gallbladder wall thickness was normal (<3mm) in 107 specimens (58.15%) and thickened (>3mm) in 77 specimens (41.85%). Mucosa was normal in 121 (65.76%), hemorrhagic in 23 (12.50%), Strawberry like in 34 (18.48%) and slightly nodular in 6 specimens (3.26%). On microscopic examination, normal epithelium was seen in 34 specimens (18.48%), epithelial hyperplasia was observed in 85 (46.20%), intestinal metaplasia in 47 (25.54%), cholesterolosis in 14 (7.61%) and dysplasia in 4(2.17%) specimens. **Conclusion:** Gallstones are accompanied by major changes in the gallbladder epithelium. The morphological spectrum of gallstone disease will certainly contribute to understand its etiopathogenesis and hence prevention. The relation between the observed changes and gallstone formation needs further studies.

Keywords: Gallstones, cholecystectomy Intestinal Metaplasia, Dysplasia.

INTRODUCTION

The gall bladder is a four-inch sac with a muscular wall that is located under the liver. Here most of the bile about three to five cups a day is removed, leaving a few tablespoons of concentrated bile. The gallbladder serves as a reservoir until bile is needed in the small intestine for digestion of fat [1]. Gallstone disease is a common health problem worldwide. It is commonly believed that bile stasis is the prime factor for gallstone formation. A major cause for stasis is gallbladder dyskinesia which in turn may be a consequence of gallbladder wall pathology [2]. Epithelium of the gallbladder and biliary tract is exposed to high concentrations

of potentially harmful exogenous and endogenous compounds excreted into primary bile [3]. 'Histological changes in gall bladder due to stone disease' is very interesting and thought-provoking [4]. Cholelithiasis produces diverse histopathological changes in gallbladder mucosa- namely, acute inflammation, chronic inflammation, granulomatous inflammation, hyperplasia, cholesterolosis, dysplasia and carcinoma [5]. Cholelithiasis is frequently associated with carcinoma gallbladder in up to 40%-100% patients and is the most common associated factor independent of age or sex [6].

We undertook this study to evaluate the incidence of the histopathological changes in the gallbladder epithelium of patients undergoing cholecystectomy due to cholelithiasis.

MATERIALS AND METHODS

This was a retrospective study carried out in the Department of Pathology, Dr. Hedgewar Arogya Sansthan Hospital during a period of 1 year. The study included 184 cases of cholecystectomy specimens. The history, clinical findings and investigations were retrieved from the records of the hospital. Detailed macroscopic examination of the specimens was done after complete fixation in 10% formalin. Each gallbladder was sectioned serially from the neck to the fundus, processed routinely and embedded in paraffin. Sections were stained with Haematoxylin & Eosin (H & E) stain and histopathological examination was carried out. Data was analyzed using SPSS 17.0 version for windows.

RESULTS

A total of 184 cholecystectomy specimens were received during 1 year period. There was a preponderance of females (M: F ratio 1: 1.5). The age of the patients varied from 23 to 76 years with a mean age of 47 years.

On macroscopic examination, the serosal surface of the gallbladder was found normal in 126 specimens (68.48%) and congested in 58 specimens (31.52%). Gallbladder wall thickness was normal (<3mm) in 107 specimens (58.15%) and thickened (>3mm) in 77 specimens (41.85%). Mucosa was normal in 121 (65.76%), hemorrhagic in 23 (12.50%), Strawberry like in 34 (18.48%) and slightly nodular in 6 specimens (3.26%). The gross findings of cholecystectomy specimens are shown in Table 1.

On microscopic examination, normal epithelium was seen in 34 specimens (18.48%), epithelial hyperplasia was observed in 85 (46.20%), intestinal metaplasia in 47 (25.54%), cholesterolosis in 14 (7.61%) and dysplasia in

4(2.17%) specimens. The microscopic findings of cholecystectomy specimens is shown in Table.2.

DISCUSSION

Gallstone disease (GD) (cholelithiasis) is one of the most prevalent gastrointestinal diseases, with a substantial burden to health care systems [7]. Cholelithiasis is common with the incidence ranging from 10% to 20% of world population, 11% of the general population of USA [8]. The estimated prevalence of gallstone disease in India has been reported as 2% to 9% [9,10]. It is 10 times more frequent in North compared to South India [11]. Dietary differences in the two regions are suspected to be responsible for the difference in the prevalence rate [12]. It is now commonly agreed that gallstones are an important risk factor for facilitating development of gallbladder cancer, despite it being adenocarcinoma [13]. In our study, the mean age of patient was 47 years. In a Brazilian study, the age at presentation was 60.2 years [8]. The average of these patients in India, is a decade younger than those in the west [14]. Epithelial Hyperplasia was the most frequent change and was found in 46.20 percent. Albores S et. Al. suggest that a small number of hyperplasia of gall bladder evolves towards atypical hyperplasia and that may progress to in situ carcinoma which finally becomes invasive carcinoma [15]. A single random histological section will detect less than one-third of hyperplasias, dysplasias and carcinomas in situ [16]. Thus our study could be missing two-thirds of these lesions. Intestinal metaplasia was seen in 25.54% cases which was 16% in other study [4]. It is widely accepted that metaplastic epithelium is more susceptible to malignant transformation than normal [17]. Epithelial dysplasia was found in 2.17% of gall bladder specimens. Others have reported the incidence of dysplasia in 2.2% of cholelithiasis specimens and 42% in the mucosa adjacent to invasive carcinoma [18]. The reasons for the wide discrepancy in the reported incidence of dysplasia could be the number of sections

examined and the criteria for histological diagnosis used in various studies. Cholesterolosis was found in 7.61% of cholelithiasis specimens whereas in other study it was found to be 13.4% [19].

CONCLUSION

The mean age group for cholelithiasis was found to be 47 years with a female being more common than males. In all cases of cholecystectomy for gallstone disease, the gallbladder should be opened and examined in detail for macroscopic abnormalities. Overall, the pathological changes of the gallbladder epithelium may play an important role in the process of gallstone formation. Histopathological examination is thus important in every case of cholecystectomy for identifying metaplasia, dysplasia and carcinoma.

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Table 1. Macroscopic findings of Cholecystectomy Specimens

Site	Findings	No. of cases	Percentage
Serosa	Normal	126	68.48%
	Congested	58	31.52%
Wall	Normal	107	58.15%
	Thickened	77	41.85%
Mucosa	Normal	121	65.76%
	Haemorrhagic	23	12.50%
	Strawberry	34	18.48%
	Nodular	6	3.26%

Table 2. Microscopic findings of Cholecystectomy Specimens

Histology	No. of cases	Percentage
Normal epithelium	34	18.48%
Epithelial hyperplasia	85	46.20%
Intestinal metaplasia	47	25.54%
Cholesterolosis	14	7.61%
Dysplasia	4	2.17%