

## Study of Assessment of Various Mucosal Changes in Gall Stone Patients: An Institutional Based Study

Manish Kumar Singh

Associate Professor, Department of General Surgery,  
Heritage Institute of Medical Sciences, Varanasi, Uttar Pradesh, India.

### ABSTRACT

**Background:** Gallstone disease is a worldwide medical problem. Hence, present study was conducted for assessing various Mucosal changes in gall stone patients.

**Materials & Methods:** 100 Cholecystectomy patients were included. Histopathological examination of 100 gallstone patients who underwent cholecystectomy was done. The various morphological responses were then categorised under three broad categories – cholecystitis, pre-invasive, and invasive. All the results were recorded and analysed by SPSS software.

**Results:** Chronic cholecystitis was the main diagnosis in 86 percent of the patients. Pre-invasive and invasive diagnosis was seen in 6 percent and 8 percent of the patients respectively. Non-significant results were obtained while assessing the correlation of mucosal response with age and gender-wise distribution.

**Conclusion:** The identification of premalignant modifications in the morphologic background of chronic cholecystitis is

an argument in favor of the metaplasia-dysplasia-neoplasia sequence.


**Key words:** Gallstones, Mucosal, Pre-invasive.

### \*Correspondence to:

**Dr. Manish Kumar Singh,**  
Associate Professor,  
Department of General Surgery,  
Heritage Institute of Medical Sciences,  
Varanasi, Uttar Pradesh, India.

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### INTRODUCTION

Gallbladder is an accessory organ of the digestive tract, storing and concentrating bile between meals. In India, gall stones in northern India are predominantly of the cholesterol variety. Gallstone disease is a worldwide medical problem, but the incidence rates show substantial geographical variation, with the lowest rates reported in African populations. Cholelithiasis has been described as a disease of civilization. Gallstone disease produces diverse histopathological changes in gallbladder mucosa-namely, acute inflammation, chronic Inflammation, granulomatous inflammation, hyperplasia, cholesterosis, dysplasia and carcinoma.<sup>1-3</sup>

Cholesterosis of the gallbladder occurs, for the most part, in multiparous women. The bile within the gallbladder with cholesterosis is usually dark and thick, and it shows a high concentration of cholesterol by chemical analysis. Cholesterol polyps are multilobular yellow formations composed of aggregates of foamy histiocytes in the lamina propria covered by an intact epithelium; they represent a morphologic variation in the theme of cholesterosis.<sup>4-6</sup> Hence, present study was conducted for assessing various Mucosal changes in gall stone patients.

### MATERIALS & METHODS

The present study was undertaken for assessing various mucosal changes in gall stone patients. The present study was conducted in the Department of General Surgery, Heritage Institute of Medical Sciences, Varanasi, Uttar Pradesh (India) on 100 Cholecystectomy patients.

Written consent was obtained from all the patients after explaining in detail the entire research protocol. 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. Additional sections were taken from abnormal mucosa.

Histopathological diagnosis was established on routine hematoxylin and eosin staining of the sections. 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, cholesterosis, mucocele, hyperplasia,

metaplasia, dysplasia and malignant changes was studied with regard to number and size of stones. All the results were analyzed by SPSS software. Assessment of results was done by using

Analysis of Variance (ANOVA) for averages and chi-square test for contingency tables and proportions. P- Value of less than 0.05 was taken as significant.

**Table 1: Distribution of subjects according to age group**

Age group	Frequency	Percent
<30	18	18
30-39	19	19
40-49	26	26
50-59	22	22
>60	15	15
<b>Total</b>	<b>100</b>	<b>100</b>

**Table 2: Distribution of subjects divided on the basis of gender**

Gender	Frequency	Percent
Male	18	18
Female	82	82

**Table 3: Distribution of subjects according to various mucosal responses**

Mucosal response	Frequency	Percent
Chronic cholecystitis	Gastric metaplasia	71
	Intestinal metaplasia	15
Pre-invasive	Mild to moderate dysplasia	4
	Severe Dysplasia	2
Invasive	Superficial	2
	Deep	6
<b>Total</b>	<b>100</b>	<b>100</b>

**Table 4: Distribution of mucosal response in subjects divided on the basis of age**

Diagnosis	Age group					Total	p- value
	<30	30-39	40-49	50-59	>60		
Cholecystitis	16	17	24	17	12	86	0.45
Pre-invasive	2	2	1	1	0	6	
Invasive	0	0	1	4	3	8	
<b>Total</b>	<b>18</b>	<b>19</b>	<b>26</b>	<b>22</b>	<b>15</b>	<b>100</b>	

**Table 5: Distribution of mucosal response according to gender**

Diagnosis	Gender		Total	p- value
	Male	Female		
Cholecystitis	11	75	86	0.85
Pre-invasive	4	2	6	
Invasive	3	5	8	
<b>Total</b>	<b>18</b>	<b>82</b>	<b>100</b>	

## RESULTS

Mean age of the patients was 43.8 years. 26 percent and 22 percent of the patients belonged to the age group of 40 to 49 years and 50 to 59 years respectively. 82 percent of the patients were females while the remaining were males. Chronic cholecystitis was the main diagnosis in 86 percent of the patients. Pre-invasive and invasive diagnosis was seen in 6 percent and 8 percent of the patients respectively. Non-significant results were obtained while assessing the correlation of mucosal response with age and gender-wise distribution.

## DISCUSSION

Gallstone disease is one of the most common disorders of the gastrointestinal tract and increasing number of cholecystectomies is being performed each year than any other elective abdominal operation. As such, clinicians need a fundamental knowledge of gallstone disease and the common complications that are associated with this disease. Symptoms will occur in approximately 20% of those with gallstones, and this subgroup is at the highest risk for developing serious complications from their gallstone disease. These complications can range from simple recurrent biliary colic to severe, life-threatening ascending cholangitis and/or pancreatitis. The prevalence of gall stone diseases varies with age, sex and ethnic group. Most people are unaware of the disease and remain asymptomatic for life. Frequently, chronic cholecystitis presents a large range of associated lesions such as cholesterosis, muscle hypertrophy, parietal fibrosis, polypoid and adenomatous proliferation of mucous glands, metaplasia, hyperplasia and dysplasia. Hence, present study was conducted for assessing various mucosal changes in gall stone patients.

In the present study, mean age of the patients was 43.8 years. 26 percent and 22 percent of the patients belonged to the age group of 40 to 49 years and 50 to 59 years respectively. 82 percent of the patients were females while the remaining were males. Laxman J et al evaluated the complications of cholelithiasis including pathological changes in the gallbladder. A prospective study of 100 cases diagnosed to have gallstones and admitted to GEMS Hospital, Srikakulam during September 2013 to October 2015 was done. LC versus OC (72 cases in laparoscopic and 28 cases in open cholecystectomy) and found that the mean operating room time was 96 min for OC and 90 min for LC. The conversion rate was 4%. The mean duration of hospital stay was 9 days for OC and 4 days for LC. Patients recovered significantly faster after LC. The commonest symptom was pain and commonest sign was tenderness.<sup>9</sup>

In the present study, chronic cholecystitis was the main diagnosis in 86 percent of the patients. Pre-invasive and invasive diagnosis was seen in 6 percent and 8 percent of the patients respectively. Non-significant results were obtained while assessing the correlation of mucosal response with age and gender-wise distribution. 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.<sup>10</sup> Srinivasan G et al quantified the various outcomes of routine gallbladder examination following cholecystectomy procedure. 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 were 31 and the number of cases with pigment stones were 26, number of cases with cholesterol stone were 2 and the number of cases with mixed stones were 3. The number of cases of acalculous cholecystitis were 5. The number of cases of cholecystectomy by laparoscopy were 30 whereas the number of cases of cholecystectomy by open procedure were 6. Chronic cholecystitis was seen in 34 cases and chronic cholecystitis with stones was seen in 29 cases and chronic cholecystitis without stones was seen in 5 cases and Acute on chronic cholecystitis with pigment stone was seen in 1 case and xanthogranulomatous cholecystitis with pigment stone was seen in 1 case. The risk factors for developing chronic cholecystitis were seen in female gender. The predominant histomorphological pattern seen in this study group is chronic calculous cholecystitis.<sup>11</sup>

## CONCLUSION

The documentation of premalignant alterations in the morphologic background of chronic cholecystitis is an argument in favor of the metaplasia-dysplasia-neoplasia sequence.

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