



## Study of gall bladder cancer patients in tertiary care hospital

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### ABSTRACT

**Introduction** – Most common cancer seen in gastro intestinal system is gall bladder cancer. It has a worldwide annual incidence of 2.2 per 100000 and 5-year mortality rate of 90%-95%. The aim of present study is to assess the gall bladder cancer in this region and to investigate association of gall bladder cancer with risk factors predisposing to gall bladder cancer. **Methods:** Prospective study was conducted to study the gall bladder carcinoma among cases who underwent cholecystectomy in the department of general surgery, Shyam Shah Medical College Rewa (MP). Statistical analysis was done by using SPSS version20. **Results:** Total cases of cholecystectomy who gave consent for the study during one year were 280. On radiological evaluation malignant lesions was observed in 22 cases. Metaplasia was significantly more common in females, 48 cases ( $P < 0.05$ ). **Conclusion-** Most deadliest cancers known is gall bladder cancer as it has short life expectancy from the time of diagnosis. It is not easy to make a diagnosis of this type of cancer preoperatively.

**Keywords-** Gall bladder cancer, Metaplasia, Cholecystectomy, Malignant, Dysplasia

### I. INTRODUCTION –

Most common cancer seen in gastro intestinal system is gall bladder cancer. It has a worldwide annual incidence of 2.2 per 100000 and 5-year mortality rate of 90%-95%<sup>(1,2)</sup>. Characteristic of Gallbladder carcinoma (GBC) is dismal prognosis owing to the paucity of early signs and symptoms. High incidence of gall bladder cancer is seen in northern India, possibly due to environmental, dietary and reproductive factors. Understanding the epidemiology of gallbladder cancer has and will continue to provide valuable

insights into determining causes and risk factors for gallbladder cancer.

Adenomatous polyps, porcelain gallbladder, high body mass index and obesity, chronic inflammation due to Salmonella and Helicobacter infections, smoking, pancreaticobiliary junction anatomy abnormality, primary sclerosing cholangitis, female sex, gallbladder stones, ethnicity, ulcerative colitis, adenomyomatosis, and age  $> 65$  are known risk factors for the development of GBC<sup>(3,4)</sup>.

The aim of present study is to assess the gall bladder cancer in this region and to investigate association of gall bladder cancer with risk factors predisposing to gall bladder cancer.

**Methods:** Prospective study was conducted to study the gall bladder carcinoma among cases who underwent cholecystectomy in the department of general surgery, Shyam Shah Medical College Rewa (MP) for duration of 1 year (January 2019 to December 2019). Study participants were all the cases who underwent cholecystectomy. The patients were analyzed according to demographic data and radiological reports. Age, sex, malignant lesions, premalignant lesions, stone presence were evaluated. Consent was taken before the conduct of study.

Statistical analysis was done by using SPSS version20. Mean and standard deviation of numerical data were used in the study, and frequency and ratio were used in the presentation of categorical data. Appropriate statistical tests were applied for analysis of data. A p value of less than 0.05 was considered statistically significant.

**Results:** Total cases of cholecystectomy who gave consent for the study during one year were 280. Among 280 cases 172 were females while 108 were males. Male to female ratio was 1:1.6, mean



age was 48.21±10.2 years. On radiological evaluation malignant lesions was observed in 22 cases. The prevalence and mean age for premalignant and malignant lesions are shown in Table 3.

Metaplasia was significantly more common in females, 48 cases (P<0.05). Presence of gallbladder

stones was a risk factor for the development of metaplasia and carcinoma, however, it did not have an effect on the development of dysplasia (Table 4).

Increased thickening of the gallbladder wall was significantly more common in patients with GBC in ultrasonography (Table 5).

**Table 1- Age wise distribution**

Age group	Number	Percent
<20 years	0	0%
20 to 40 years	0	0%
41 to 60 years	115	41%
61 to 80 years	159	56.8%
>80 years	6	2.2%

**Table 2- Distribution according to gender and mean age**

Gender	Number	Percent (%)
Male	108	38.5
Female	172	61.5
Total	280	100
Mean age	48.21	

**Table 3- Distribution according to risk factors**

Risk factors	Number	Percent (%)
Metaplasia	58	20.7
Dysplasia	140	50
Carcinoma	22	7.8
Others	60	21.5
Total	280	100

**Table 4- Gender wise distribution of risk factors**

Risk factors	Female	Male
Metaplasia	48	10
Dysplasia	66	74
Carcinoma	17	5
Others	41	19
Total	172	108

**Table 5- Comparison of premalignant and malignant lesions of gall bladder according to ultrasonography features**

USG results	Metaplasia	Dysplasia	Carcinoma	P value
Microlithiasis	17	11	1	<0.05
Increasing wall thickening	20	31	11	
Multiple stones	21	98	10	
Total	58	140	22	



## II. DISCUSSION

Geographical variations may affect the GBC incidence. Zhang et al. <sup>(6)</sup> reported that 0.19% of 10,466 patients who underwent laparoscopic cholecystectomy between 1999 and 2007 in China were diagnosed with GBC <sup>(6)</sup>. Different incidence rates may be attributed to variations in ethnicity, geography, socioeconomic background, race and eating habits. In addition, inadequate preoperative examination in less developed countries may be the reason for this variation. Only 30% of patients are suspected of having GBC before gallbladder surgery, and 15%-25% of them are eligible for surgical treatment <sup>(1)</sup>. In our study 7.8% cases with gall bladder carcinoma had undergone surgical treatment.

In the present study, premalignant and malignant lesions of the gallbladder were more frequently observed in females, and female sex was a significant risk factor for the development of metaplasia and development of GBC. Similar results were seen in some previous literature <sup>(7,8,9)</sup>. Female sex hormones may be linked to the development of premalignant and malignant lesions of the gallbladder. Estrogen increases the secretion of xenobiotics and cholesterol. Progesterone also impairs contractility of the gallbladder and prolongs gallbladder residence time of bile <sup>(10)</sup>. However, further studies are needed on this subject.

Advanced age is another known risk factor for the development of GBC <sup>(11)</sup>. Consistent with data in the literature, our study found that advanced age was the most important risk factor for the development of GBC (Table 1). Ahn et al. <sup>(12)</sup> found that an age 65 years or older was the only independent predictor of GBC. In a study by Hundal and Shaffer <sup>(13)</sup>, metaplasia, dysplasia and carcinoma transformation in GBC was thought to have developed over a span of 5-15 years <sup>(13)</sup>. Neoplastic cascade of metaplasia-dysplasia-carcinoma requires many years to develop, and this may be the reason for the higher incidence of GBC in elderly patients.

Gallstones are a well-known potential risk factor for GBC, with an 8.3% higher risk in patients with gallstones than in the general population <sup>(14)</sup>. GBC develops in only 0.2%-3% of all patients with cholelithiasis <sup>(4)</sup>, but gallbladder stones are present in 90% of patients with GBC <sup>(15)</sup>. Waghmare and Kamat <sup>(16)</sup> reported that gallstones had a strong association with GBC. Jha et al. <sup>(17)</sup> also reported that GBC was associated with gallstones in 14 of 20 patients. A cohort study by Ryu et al. <sup>(18)</sup> also showed that gallstones were associated with increased risk of mortality in GBC. Shaffer argued that patients with gallstones larger

than 3 cm had a 4% risk of developing GBC over 20 years <sup>(19)</sup>. Hamdani et al. <sup>(20)</sup> reported that 86% of 198 patients diagnosed with GBC between Jan 2004 and Dec 2011 had gallstones. They supported this association by reporting that the routine scenario for GBC was elderly women with gallstones. De Aretxabala et al. <sup>(21)</sup> reported that 53 of 54 patients with resectable GBC presented with gallstones. Gallstones and chronic inflammation caused by gallstones have the potential to create metaplasia, and it was demonstrated that metaplasia in gallbladder can cause the development of dysplastic epithelium, which plays a role in the development of GBC <sup>(22)</sup>. Wistuba and Gazdar <sup>(23)</sup> proposed multi-step pathogenesis of gallbladder cancer from gallstones to carcinoma that may take over 20 years. A review article by Shrikhande et al. <sup>(24)</sup> supports prophylactic cholecystectomy in patients with cholelithiasis in populations having a higher GBC incidence. However, some authors argue against gallstones as a potential cause of GBC. Maringhini et al. <sup>(25)</sup> reported that only five (0.19%) of 2583 patients with gallstones developed GBC. Thus, an overall cumulative GBC incidence was found to be 1% for 20 years after the initial diagnosis of gallstone in patients who did not undergo cholecystectomy. In our study, the presence of gallstones was found to be a risk factor for the development of metaplasia and carcinoma (Table 5).

## III. CONCLUSION

Most deadliest cancers known is gall bladder cancer as it has short life expectancy from the time of diagnosis. It is not easy to make a diagnosis of this type of cancer preoperatively. Also the definitive treatment of this cancer is surgery. So we have to consider gall bladder carcinoma in individuals with the high-risk, genetic predisposition, an increase in gallbladder wall thickening on ultrasonography and in elderly patients with gallstones. Cholecystectomy should be considered as the most effective method to prevent the development of cancer in patients of advancing age and females with gallbladder stones.

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