Section: General Surgery

Original Research Article

A DESCRIPTIVE STUDY OF ETIOPATHOGENESIS OF GALL BLADDER MASS IN A RURAL TERTIARY CARE HOSPITAL OF WEST BENGAL

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ABSTRACT

Background: Gall Bladder cancer (GB Ca) although rare, is the most common biliary tract malignancy .Due to the highly malignant biology, delayed presentation, challenging anatomic location, and advanced stage upon diagnosis, the prognosis for GB Ca remains dismal. Knowledge of predisposing factors may facilitate earlier diagnosis by enabling targeted investigations into otherwise non-specific presenting signs and symptoms. Detecting GB Ca in its initial stages offers patients their best chance of cure.

Materials and Methods: A single centre hospital based descriptive cross sectional study conducted within a time frame of 1 yr . All the patients presenting in the Department of General surgery ward, OPD with signs and symptoms of GB mass underwent thorough evaluation in the form of Detailed history and clinical examination, pathological, Radiological, operative and HPE findings. For statistical analysis, data was also entered into Microsoft Excel spread sheet and then analyzed by SPSS.

Result: Out of the 100 cases of GB mass (female predominant-72%) 86 % found to be associated with stone,22% with abnormal pancreatico-billiary junction, 9% with porcellin GB. Infective etiology , choledochal cyst found to be associated in 10% and 33% of cases respectively. 94 cases found to be malignant out of that only 34 were surgically resectable.

Conclusion: Most gallbladder cancers, unfortunately are discovered incidentally at routine cholecystectomy or present as advanced stage of the disease. At diagnosis less than 30% patients are candidates for curative surgery. so identification of regional etiopathological factors will be helpful for early diagnosis and optimum outcome.

INTRODUCTION

Gallbladder cancer (GBC) is an uncommon tumor that primarily affects the elderly. GB cancer although rare, is the most common biliary tract malignancy and the 20th most Common Cancer Worldwide; sixth most common carcinoma of GIT.[1]

Due to the highly malignant biology, delayed presentation, challenging anatomic location, and advanced stage upon diagnosis, the prognosis for GBC remains dismal. Mostly presented with non specific symptoms and or with palpable GB mass. Often discovered incidentally after cholecystectomy performed for Benign diseases.

Prevalence of GB mass varies to 3% - 7% in general Indian population along with Increases the chances depending on geographic distribution and racial ethnicity. Like North East and West Bengal, Orissa and Assam has slightly higher incidents of GB mass.[2]

Benign disorder / mass like GB polyps, Adenomyoma, very rarely Leiomyoma and more Show a range of clinical signs and symptoms. Risk of Formation of GB malignancies such as chronic bacterial Infection, PSC, Anomalous Junction of pancreatico biliary duct, GB polyp >10 mm are associated with higher risk of GB Cancer.

Chronic inflammation is the most critical risk of gallbladder cancer.

The strongest correlation to develop gallbladder cancer is a history of gallstones (cholelithiasis), and the risk increases with gallstone size, chronicity, and burden of symptoms.[3-5]

Porcelain gallbladder, a calcification of the gallbladder, is often related to chronic cholelithiasis.

This condition is usually found incidentally on imaging and often leads to cholecystectomy.[6]

The other risk factors include gallbladder polyps, congenital biliary cysts, and abnormal pancreaticobiliary anatomy, which all lead to chronic inflammation culminating in gallbladder cancer.[7]

Endemic areas with salmonella typhi and helicobacter report a link with chronic asymptomatic carriers and an elevated risk for gallbladder cancer.

Chronic primary sclerosing cholangitis and inflammatory bowel disease can also lead to gallbladder cancer.[8]

The treatment for locally progressed and metastatic disease is palliative chemotherapy. In contrast, the early-stage disease is possibly curable with surgical intervention and adjuvant treatment. The estimated five-year survival rate for GBC is 5%, with a median survival time of around six months.[9] In a few cases, early malignancies are discovered incidentally during cholecystectomy for cholelithiasis; in these instances, the five-year survival rate is greater than 80%.[10]

GB Cancer is an aggressive malignant diseases and carrier an extremely poor prognosis patients have no specific presenting symptoms and therefore presentation with late stage diseases is common. For patients with earlier stage of diseases, a more aggressive Surgical approach is warranted.

Knowledge of predisposing factors may facilitate earlier diagnosis by enabling targeted investigations into otherwise non-specific presenting signs and symptoms. Detecting GBC in its initial stages offers patients their best chance of cure.[7]

Aims & Objectives

The objective of the study are to investigate the patients with diagnosed GB mass and GB carcinoma regarding

1. Etiological factors of GB mass.
2. Malignant nature &extent of GB mass and cancer.
3. Resectability and mortality and morbidity

MATERIALS AND METHODS

A single centre hospital based descriptive cross sectional study conducted within a time frame of 1 yr

Inclusion Criteria

Patient with GB mass with

- Gallbladder stone
- Gallbladder polyps and mass (greater than 1 cm in size, strawberry mass, multiple polyps, adenomatous polyp, papillomatosis, leiomyoma, lymphoma, sarcoma, above 30 years of age).
- Porcelain gallbladder.
- Abnormal pancreatico duct junction.
- who are alcoholic.

Exclusion Criteria

- Patients who are not willing to give consent for the study.
- Patient above the age of 70 years

All the patients presenting in the Department of General surgery ward, OPD with signs and symptoms of GB MASS underwent thorough evaluation in the form of

- Detailed history and clinical examination
- Hematological: routine blood investigation
- Radiological test: USG, CECT, MRCP
- USG guided FNAC (for inoperable cases)
- Diagnostic laparoscopy (for cases operable on clinical and imaging ground)
- Intraoperative findings
- Histopathological findings

Statistical Analysis

For statistical analysis, data was also entered into Microsoft Excel spreadsheet and then analyzed by SPSS (version 27.0, SPSS Inc. Chicago, USA) and Graph Pad Prism (version 5). Data has been summarized as mean and standard deviation for numerical variables and count and percentage for categorical variables. A chi-squared test was used for any statistical hypothesis test wherein the sampling distribution of the test statistic is chi-squared distribution when the null hypothesis is true. Unpaired proportions where compared by chi-square test or Fischer‘s exact test, as appropriate.

Explicit expressions that can be used to carry out various t-tests are given below. In each case, the formula for a test statistic that either exactly follows as clearly approximates a t-distribution under the null hypothesis is given. Also approximate degrees of freedom are given in each case.

Each of these statistics can be used to carry out either a one-tailed test or a two-tailed test.

Once a t value is determined, a p-value can be found using a table of values from student‘s t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually 0.10, 0.05 or 0.01 level) then the null hypothesis is rejected in favor of the alternative hypothesis

P-values $\leq$ 0.05 was considered for statistically significant.

RESULTS AND DISCUSSION

A descriptive observational study has been carried out in the department of general surgery, BSMC&H from 1st September 2022 – 31st august 2023. 100 patients has been studied on the basis of etiopathogenesis of gallbladder mass. Complete observational analysis of all the parameters studies are as follows

In the study 100 patients were included with the mean age of (mean ± s.d) of the patients was 49.5 ± 9 years within the range of 30- 69 years and the median age was 52 years. Most of the patients of GB mass were with the age of ≥40 years which are significantly higher.

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Maximum patients presented with GB mass is female (72%). Male: female ratio of GB mass 1:2.56 in our study. So the prevalence of GB mass is more common and higher in female population.

Table 1: GB mass associated with GB Stones

GB mass	Number	Percentage
With stone	86	86%
Without stone	14	14%
Total	100	100%

Those patients who presented with GB mass, 86% patients are found to be with stones in the GB in different sizes and less number of patients 14% without association of any GB stones. Thus, the patients suffering from GBC are strongly associated with GB stones. In this study, Chi square statistics is 0.0403 and P value is 0.840 which is not significant (as P value ≥ 0.05).

In our study, patients developed GBC is strongly associated with GB polyp and about 68% patients are having GB polyp > 1 cm.

Table 2: Association of Abnormal Pancreatico-billiary Junction and GB mass

Structural abnormality	Number	Percentage
APBJ	22	22%
Without APBJ	78	78%
Total	100	100%

22% of the patients with GB mass are found to be diagnosed with APBJ. And within the benign mass there were no association of APBJ. So among 93 patients of malignant mass or developing GBC, 23.65% patients were associated with APBJ. The chi-square statistics is 7.6863. The p-value is 0.005564 (significant).

In this study we found that 9% patients having porcelain GB associated with GB mass. The chi square statistic is 0.6486. The p-value is 0.420596 (not significant).

Table 3: GB mass associated with Typhoid carrier

Infective etiology	Number	Percentage
Typhoid carrier	10	10%
Without typhoid carrier	90	90%
Total	100	100%

In our study 10% patients found to have infective aetiology like typhoid carrier among the 100 patients of GB mass. In case of benign mass very rare association with infective etiology like typhoid carrier.

In our study 33 cases of GB mass were associated with choledochal cyst, which is a strong etiopathological factor for developing GBC. The chi square statistic is 1.9875. the p-value is 0.158604. Not significant at $p \leq 0.05$.

In our descriptive study a significant number of patients presented with primary sclerosing cholangitis (12) in 100 patients with GB mass. The p-value is < 0.00001. significant $p \leq 0.5$.

In our study population of GB mass consumption of alcohol was about 14% which varies in different observed studies all over the world on the basis of their living standard, socio-economic factors, lifestyle and geographical distribution. Smoking is another important factors for developing GBC which was not included in our observation and analysis part. (As maximum patients came from lower socio- economic status specially female has not revealed their addictive history like smoking in the form of cigarettes, bidi, gutkha.)

Table 4: T- stage of GB carcinoma

T- stage	Number	Percentage
Tis	2	2.16
T1a	3	3.22
T1b	8	8.60
T2	21	22.58
T3	31	33.33
T4	28	30.11
Total	93	100.00

Maximum patients were presented with advancing stage of the disease (GBC).28 patients (30.11%) presented with T4 stage and 31 patients (33.33%) T3 stage among malignant mass. Maximum patients were presented with advancing stage of the disease (GBC). 28 patients (30.11%) presented with T4 stage and 31 patients (33.33%) T3 stage among malignant mass.

Table 5: Lymph node status of GB carcinoma

Lymph node status	Number	Percentage
N0	12	13.19
N1	30	32.97
N2	49	53.84
Total	91	100.00

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Lymph node involvement in this study, 49 cases belongs to N2, 30 cases belongs to N1 and there is no involvement of LN in only 12 cases.

Table 6: Benign Mass VS Malignant Mass

Nature of mass	Number	Percentage
Benign	7	7%
Malignant	93	93%
Total	100	100%

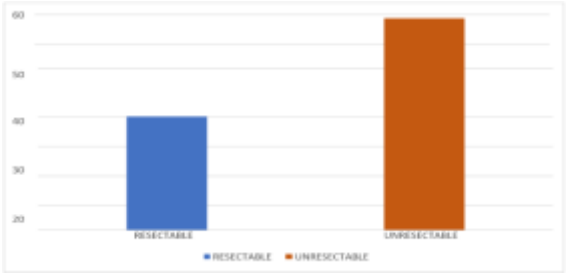

Figure 1: simple bar diagram showing GB Mass Surgically Resectable/Unresectable

Maximum patients presented with GB mass is malignant in nature 93% and very few patients presented with tumour like lesions, benign polypoidal mass, benign cyst and mucocele which mimics GB mass and that is only 7% in our study population. The chi square statistic is 0.0823. The p-value is 0.774244. Not significant at $p \leq 0.05$.

In our study maximum cases of malignant GB mass or GB cancer were unresectable (59 cases of malignant mass). 34 cases of malignant mass were surgically resectable. All the 7 patients presented with benign mass like polypoidal lesions and mucocele were resectable.

CONCLUSION

GB mass presents with palpable mass over abdomen with or without any clinical symptoms of the individuals. In maximum cases, GB mass ultimately presents with GB cancer and very few of the benign polypoidal mass along with distended gall bladder presents as GB mass. The presence of GB mass that nearly fills or replaces the lumen as its growing nature and invading the surrounding liver parenchyma highly suggestive of GB carcinoma.

GBC is uncommon with a high case fatality occurring over a wide geographical area. Risk factors include advanced age, female gender, cholelithiasis, GB polyp, choledochal cyst, chronic infections, porcelain gallbladder, smoking and alcohols.

Most gallbladder cancers, unfortunately are discovered incidentally at routine cholecystectomy or present as advanced stage of the disease.

The role of radiological imaging like ultrasounds, CT scans, MRI, MRCP, endoscopic procedures and FNAC is for diagnostic and staging purposes.

Adenocarcinoma accounts for the majority of the gallbladder cancer. Surgery is the only curative therapy of GBC.

Very rarely, GB mass presents as benign polypoidal lesion and mucocele. There is cholecystectomy either laparoscopic or open is the choice of treatment with some recommended guidelines.

However, at diagnosis less than 30% patients are candidates for curative surgery. The extent of surgical intervention is dependent on TNM stage of the disease and may range from simple cholecystectomy to in T1a tumor to partial hepatectomy and regional lymph node dissection in ≥ T2 tumors. Sometimes this may require resection of the tumor bed following the definitive pathological report.

Early diagnosis and curative surgery is the best possible treatment modality available till date. So knowledge of predisposing / risk factors and their distribution in specific geographic area will help to take the initiation for treatment at the earliest.

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