Frequency of Gall Bladder Carcinoma among Patients of Cholelithiasis at Tertiary Care Hospital

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Authors’ contributions

Present research work was done in collaboration among all authors. Author MMK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ATM and RBB review the literature and contribution in manuscript writing. Author RBB managed the literature searches. Author SY contribution in data collection and managed the analyses of study. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2020/v32i2130746

Editor(s):
(1) Dr. Vasudevan Mani, Qassim University, Saudi Arabia.

Reviewers:
(1) Priya J. P. Narayan, Swami Rama Himalayan University, India.
(2) Aditya Prasad Padhy, Kalinga Institute of Medical Sciences, India.

Complete Peer review History: http://www.sdiarticle4.com/review-history/58611

ABSTRACT

Objective: To determine the frequency of carcinoma of Gall Bladder in hospitalized patients undergoing surgeries for cholelithiasis at tertiary care hospital.

Study Setting: General surgery department of Muhammad Medical College Mirpurkhas.

Study Design: Descriptive.

Study Duration: From 2018 to 2019.

Methodology: All the patients of cholelithiasis diagnosed via trans-abdominal ultrasound, those who underwent cholecystectomies and either of gender were included. After surgeries, specimens immediately were sent to the Hospital diagnostic laboratory to evaluate the gall bladder carcinoma. The information obtained was noted on a pre-designed proforma.

Results: A total 200 patient of gall bladder stone disease were observed who underwent cholecystectomies. Average age was 53.8±5.62 years and male to female ratio was 1:2.5. Incidence of carcinoma of gall bladder was 4%, which was significantly associated to gall bladder mass, chronic calculus cholecystitis and porcelain gall bladder (p=0.001).

Conclusion: The incidence of the gall bladder cancer in the study population was 4% and its relationship with gall bladder diseases (chronic cholecystitis and porcelain) was found to be significant.

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1. INTRODUCTION

Gall bladder measures around only one inch in width (2 cm) and gallbladder cancers represent approximately 165,000 cancer deaths each year, representing 1.7% of all deaths of cancer worldwide.[1] Prevalence of gall bladder carcinoma thought the world has a geographic inconstant pattern; the greatest prevalence has been registered from Asia, South America, and Europe[2]. Carcinoma of the gallbladder is a fairly rare neoplasm that indicates a potential preponderance of female gender possibly linked with a greater prevalence of cholelithiasis in females. Gall bladder carcinoma occurs more commonly at the age around 70 years than the cholelithiasis which occurs mostly at around 40 years of age [2]. In the United States, in Hispanics and Native Americans, the prevalence of gall bladder carcinoma is greater than all other ethnicities [3]. The main risk factor for the carcinoma of gall bladder is cholelithiasis. According to studies, 70-94% of the gall bladder carcinoma cases have cholelithiasis.[2] Cholelithiasis results in about 80-90% of renal carcinoma cases in the western nations.[2] Gall bladder carcinogenicity is correlated with the porcelain gall bladder (10% to 20%), gall stones (80%) and irregular choledochopancreatic duct junction. Gallstone size can also be a potential risk factor of Gall bladder carcinoma [4,5]. The connections between Gall bladder cancer, Gallstone disease, and other hepatobiliary infections and preceding Helicobacter infection have appeared from recent epidemiological and clinical trials [6]. Cholelithiasis has been consistently recognized as one of the most important associated factor in the causation of the Ca gall bladder. Interestingly, this is noted that in around 60-95% of gall bladder carcinoma cases major contributor is gall stone. The reported incidence of gall bladder carcinoma in cholecystectomies in Pakistan ranges from 6-28% in various studies [7,8]. Gall bladder cancer usually occurs in the gall bladder fundus, and metastases are normal for the lymph nodes, liver and further organs. Histologically, Presence of calculi and polyps, porcelain condition, chronic infection, obesity and diabetes mellitus may be risk factors for gall bladder cancer.[9] The ignorance of early disease detection may lead to lethal outcome. This study has been conducted to evaluate the frequency of gall bladder carcinoma in cases presented with cholelithiasis at tertiary care Hospital.

2. MATERIALS AND METHODS

This descriptive study was held at general surgery department of Muhammad Medical College Mirpurkhas. Study duration was from 2018 to 2019. All the patients of cholelithiasis diagnosed via trans-abdominal ultrasound, those who underwent cholecystectomies and either of gender were included. Patients of gall bladder carcinoma without any gall stones and having histopathological diagnosis apart from gall bladder cancer were excluded. Complete medical history and routine laboratory investigation including trans-abdominal ultrasound were undertaken. After taking informed consent, patients underwent cholecystectomies. Surgeries were done via senior surgeons having minimum experience of 5 years. After surgeries, specimens were sent immediately to the Hospital diagnostic laboratory for biopsy to detect the gall bladder carcinoma. The information obtained was collected via self-made proforma. Data was analyzed by using SPSS version 20. Frequency and percentage were calculated for categorical data. Mean and standard deviation were calculated for numerical data. Chi-square test was applied and p-value <0.05 was considered as significant.

3. RESULTS

A total 200 patient of gall bladder stone disease were observed who underwent cholecystectomy. The age rang was between 38 to 63 years with an average age of 53.8±5.62 years. Out of all study participants, 35.0% were males and 65.0% were females. Table 1

| Age         | Female | Percentage |
|-------------|--------|------------|
| 30-39 years | 20     | 10.0%      |
| 40-49 years | 90     | 45.0%      |
| 50-60 years | 70     | 35.0%      |
| >60 years   | 20     | 10.0%      |
| Total       | 200    | 100.0%     |

| Gender |       |   |
|--------|-------|---|
| Males  | 70    | 35.0% |
| Females| 130   | 65.0% |
| Total  | 200   | 100.0% |
Table 2. Ultrasound finding in of patients of cholelithiasis n=200

| Ultrasound finding                              | No. of patients | Percentage |
|-------------------------------------------------|-----------------|------------|
| Gall Bladder Mass                               | 03              | 01.5%      |
| Cholelithiasis with thick walled GB             | 15              | 07.5%      |
| Cholelithiasis with chronic cholecystitis       | 14              | 07.0%      |
| Cholelithiasis with porcelain GB                | 06              | 03.0%      |
| Cholelithiasis with normal GB wall thickness    | 162             | 81.0%      |

Gall bladder carcinoma was found in eight patients out of all study participants. Therefore the incidence of carcinoma of gall bladder was 4%. Fig. 1.

According to the ultrasound findings, three patients had gall bladder mass, 15 patients had thickened wall gall bladder, chronic calculus cholecystitis was in 14 patients and porcelain gall bladder was in 6 patients out of 200 cases. Table 2.

Gall bladder carcinoma was significantly associated with gall bladder mass, chronic calculus cholecystitis and porcelain gall bladder (p=0.001). Table 3.

4. DISCUSSION

In comparison with the incidence of chronic cholecystitis, gall bladder carcinoma is rare and is generally revealed in a postoperative histopathological evaluation [10,11]. Gall bladder carcinoma is typically accidentally diagnosed following an operation with gallstone conditions [10,12]. In present study average age of patients was 53.8±5.62 years. On the other hand, Haq N et al [10] reported that mean age of gall bladder patients was 49±12.27 years. Butti AK et al [13] reported that majority of the patients were of 31–40 years of age.

In this study 35.0% were males and 65.0% were females. Similarly Butti AK et al [13] reported that out of all patients, majority of the cases were females with F:M ratio of 6.14:1. However, another study revealed a prevalence rate of 6.12% and this disease was more common among females (9.6%) than males (3.1%).[14] Another study conducted by Soomro AG et al [15] reported Carcinoma of Gall bladder in an early age with female preponderance and a high incidence of 3.64 percent.

In the present series frequency of gall bladder carcinoma was 4%. In Indians, Chileans and North Indian regions, a high prevalence of all biliary tract infections was reported around 9.1%.
Gall-bladder cancer represents <1% of fresh carcinoma diagnoses in western practice [16]. Nevertheless, a local study found a high prevalence of 32% in Gallbladders removed for gallstones [17]. Obviously, in Pakistan, in cholelithiasis patients there is a significant variance in frequency of gall bladder carcinoma (0.68 to 28%). This variance could be due to sampling variations, environmental and geographically, age more than 70 years, gall bladder calculi and longer-term chronic inflammation, staff working within the metal and/or rubber industry, smoking, typhoid carriers, obesity, genetic factors (close relative with gallbladder carcinoma has 5 times greater risk), diet (rich carbohydrates and low fiber), pathologist competence and medical facilities provision in the region. Zhang WJ et al[18] found incidence of gall bladder carcinoma at 0.19%.

In the study of Malik KA [19] gall bladder carcinoma was in 6.15% patients of cholelithiasis. SuJata J et al[20] reported that out of all study participants, 6 (0.96%) patients were observed with incidental carcinomas of the gall bladder. In another study of Jan Y et al[21] gall bladder carcinoma was seen among 5 patients out of 310 specimens. Consistently, Lohana D et al[22] observed 45 gall bladder carcinoma in patients of cholelithiasis. Naqvi SQH, et al [8] also found comparable findings as GB carcinoma was in 5.9% patients of cholelithiasis.

In this study gall bladder carcinoma was significantly associated with gall bladder mass, chronic calculus cholecystitis and porcelain gall bladder. Similarly Malik KA [19] stated that prolonged duration of cholelithiasis had important role in development of carcinoma. Consistently, Junejo A et [7] also reported that GB carcinoma was in 10.86% cases out of 138 patients and commonest risk factors were thicken gall bladder wall and irregular gallbladder wall. Other studies also stated that prolonged chronic inflammation due to cholelithiasis plays a role in the tumor formation and carcinogenesis.[22,23]. However, patients should not be kept on waiting for long duration. Surgeons should counsel the patients that early treatment (cholecystectomy) may prevent form adverse complications of cholelithiasis.

5. CONCLUSION

The incidence of the gall bladder cancer in this study population was 4% and it was mostly linked to chronic cholecystitis and porcelain gall bladder. Ultrasonography is the best non-invasive diagnostic tool. Early treatment should be done in patients of cholelithiasis to protect the patients from chronic and porcelain conditions, because these condition are on high risk. Further large sample size and multicenter studies should be done to assess the risk factors of gall bladder carcinoma in patients of cholelithiasis.

CONSENT

Written informed consent was taken from each patient or their attendants by the authors.

ETHICAL APPROVAL

Study was conducted after approval as per University/ college standard.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/58611