



Incidence of Gall Bladder Carcinoma after Cholecystectomy in Patient Attending Shorsh General Teaching Hospital in Sulaimaniyah

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Abstract

Background and objectives: Gallbladder carcinoma is the most common biliary tract malignancy and the fifth most common cancer of the gastrointestinal tract. An incidental finding of carcinoma is incidental gallbladder carcinoma. This study is aimed to find the incidence of hidden gallbladder carcinoma.

Methods: The records of 307 patients who underwent a cholecystectomy over five years (January 2017 to December 2021) were reviewed as a retrospective cohort study at Shorsh General Teaching Hospital, Sulaimaniyah city, Kurdistan region, Iraq. The patient's data were collected using a simple random sampling method. Patients with radiological evidence of preoperative suspicion of malignancy before cholecystectomy were excluded. The notes of patients who underwent surgery for stones or benign biliary diseases were reviewed.

Results: The average age group in the decade was 21-63 years, and 140 were men (45.6%), while 167 were women (54.4%), with no significant difference. Out of 307 cases of cholecystectomy, 273 of them (88.9%) had surgery due to gallstones, and 3 of them (1%) had a pathological diagnosis of gallbladder cancer.

Conclusion: Old age and male gender were demographic risk factors for gallbladder cancer. Also, no significant relationship between gallbladder carcinoma and gallstones was observed. However, prophylactic cholecystectomy was likely to be beneficial for patients with chronic gallstones and at risk of the disease.

Keywords: Cholecystectomy, Gallbladder carcinoma, Gallstone, Incidence, Retrospective cohort study

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Introduction

Gallbladder carcinoma accounts for 2-4% of gastrointestinal malignancies. Its incidence in incidental autopsies is 0.4%, comprising about 5% of all cancers discovered in autopsies. Approximately 1-2% of patients who undergo biliary tract surgery have gallbladder carcinoma.¹ 90% of those who develop gallbladder cancer are 50 years of age or older². Macroscopically, gallbladder carcinoma can appear papillary, nodular, infiltrative, or mixed. The infiltrative form is the most common manifestation, which appears as a gallbladder wall thickening. The papillary and nodular forms are polypoid lesions with frondlike projections and a circumscribed mass, respectively.³ The incidence of this cancer in women is 3 to 4 times more than in men, while men are more susceptible to bile duct cancer.^{4,5} Several risk factors for gallbladder cancer have been determined, including chronic inflammation of the gallbladder, cholangitis, gallstones, calcified gallbladder, anomalous pancreaticobiliary junction, congenital biliary cysts, some drugs and carcinogens.^{6,7} Other known risk factors include gallbladder polyp (>1.5 cm), age (>50 years), genetic predisposition, empyema, female gender, and geographic/ethnic factors.^{1,2,8} According to these studies, gallstones were present in 70-94% of patients with gallbladder carcinoma. Still, its pathogenesis is unknown.⁸ Gallbladder cancer is ten times more likely to occur in patients with gallstones of ≥ 3 cm compared to those with gallstones of <1 cm.⁹ In a cohort study on 2583 patients with gallstones, it was found that the absolute incidence and the number of women and men who were diagnosed with gallbladder cancer was low (only five people). Also, there was no correlation between gallstones and increased incidence of other gastrointestinal tract malignancies.¹⁰ Gallbladder carcinoma is also associated with polypoid lesions, but no association has been reported in some

other reports.¹¹ The symptoms and signs of gallbladder carcinoma are usually indistinguishable from cholecystitis and cholelithiasis.^{12,13} These symptoms include abdominal discomfort (pain in the upper right quadrant of the abdomen), weight loss, jaundice, anorexia, nausea and vomiting, which are 66, 59, 51 and 40%, respectively.¹⁴ But despite this, patients with primary invasive cancer are mostly asymptomatic or have non-specific symptoms similar to gallstones or cholecystitis, and often due to non-specific symptoms, gallbladder cancer is not diagnosed before surgery. It is determined unexpectedly during a laparotomy to investigate another disease or after the pathology results.¹⁵ Laboratory findings are not diagnostic.¹³ Using a Computed Tomography (CT) scan, about two-thirds of patients may be correctly diagnosed, while 36-72% are correctly diagnosed using CT and ultrasound.¹¹ Therefore, despite many advances that have been made in the field of diagnostic technology, due to the anatomical location of the gallbladder and the non-specificity of the symptoms, the diagnosis of gallbladder cancer is often in the late stages and associated with a poor prognosis, so that the 5-year survival in 5 to 12% of studies have been reported.¹⁶ Because it is tough to diagnose gallbladder carcinoma before surgery, in this study, we have tried to investigate the percentage of gallbladder carcinoma in cholecystectomy conducted in the Shorsh General Teaching Hospital. The attention of doctors should be directed to the possibility of gallbladder carcinoma in all patients with digestive problems.

Patients and methods

This is a retrospective cohort study that was conducted in Shorsh General Teaching Hospital, Sulaimaniyah City, Kurdistan region, Iraq, on 307 patients who underwent cholecystectomy from January 2017 to December 2021. The Kurdistan Higher



Council approved the proposal of the research of Medical Specialties (KHCMS), then approval was taken from the hospital ethical committee before the commencement of the study and documented informed consent regarding the Helsinki declaration was obtained from each participant, and the purpose of the study was clarified for them. Patients with radiological evidence of preoperative suspicion of malignancy before cholecystectomy were excluded, while the notes of patients who underwent surgery for stones or benign biliary diseases were reviewed. Then, it was checked that the final diagnosis of how many cases that were diagnosed with gallstones and underwent cholecystectomy was gallbladder cancer. The surgical operations were done by a specialized team including all authors (3 of them are GIT surgeons) in most of the surgeries as well as follow-up (24 hours to 1 week). The diagnostic criteria utilized in this study involve ultrasound imaging, which a specialist physician afterwards validates. Similarly, the diagnosis of cancer was established by the examination of the patient's pathology report. Statistical data analysis was conducted using the Statistical Package for the Social Sciences (SPSS, version 26). Quantitative variables were expressed as mean $\pm$ standard deviation, and qualitative variables as frequencies and percentages. A p-value of ≤ 0.05 was considered as a statistically significant association.

Results

In this study, 307 cases of cholecystectomy were investigated. Of these, 140 were males (45.6%) and 167 were females (54.4%). The maximum age prevalence in both sexes was 30-40 years old, and the mean age for patients was 42.58 ± 8.979 years, as shown in Figure (1).

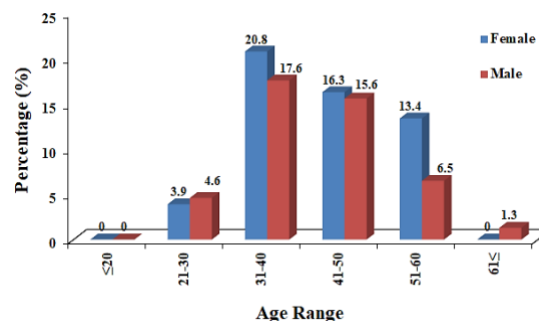


Figure (1): Frequency of cholecystectomy in patients with different age decades.

Among all performed cholecystectomy, there were 3 cases (1%) of gallbladder cancer, including one female (0.33%) and two males (0.66%). The average age group in both groups was 50-60 years. Ultrasound findings of the investigated subjects included 273 cases of gallstone (88.9%), 24 cases of polyp (7.8%), 8 cases of acalculous cholecystitis (2.6%), and 2 cases of congenital anomalies (0.7%), as shown in Table (1).

Table (1): Ultrasound findings in studied patients.

Ultrasound Finding	Number	Percentage
Gallstone	273	88.9
Polyp	24	7.8
Acalculous cholecystitis	8	2.6
Congenital anomalies	2	0.7

NS: No significant difference using the Chi-square test.

Histopathological results of the examined subjects included carcinoma in 3 cases (1%), acute cholecystitis in 124 cases (40.4%), chronic cholecystitis in 146 cases (47.6%), and cholesterosis in 34 cases (11.1%). No significant correlation was observed between gallbladder carcinoma and gallstones ($p=0.553$), as shown in Table (2).



Table (2): Histopathological results in patients.

Histopathological results	Number	Percentage	p-value
Carcinoma	3.0	1.0	0.553 NS
Acute cholecystitis	124	40.4	0.612 NS
Chronic cholecystitis	146	47.6	0.776 NS
Cholesterolosis	34	11.1	0.888 NS

NS: No significant difference using the Chi-square test

Past medical history of the examined subjects included hypertension in 94 cases (30.6%), diabetes mellitus in 56 cases (18.24%), and hypercholesteremia in 32 cases (10.42%). A significant correlation ($p \leq 0.05$) was found between the incidence of gallstones and the availability of metabolic diseases, as shown in Table (3).

Table (3): Past medical history in patients.

Past medical history	Number	Percentage	p-value
Diabetes mellitus	56	18.24	0.02 *
Hypertension	94	30.6	0.00 5*
Hypercholesterol emia	32	10.42	0.00 8*

*Significant difference using the Chi-square test

Discussion

Due to the non-specificity of clinical manifestations and the tendency to replicate the clinical presentation of benign gallstone disease, it is challenging to diagnose accidental gallbladder carcinoma before surgery.⁴ This is especially true in gallstones, which make it difficult to detect. A localized region of increased thickness or a conglomeration is observed on abdominal

ultrasound imaging.⁵ Long-term gallstone disease causes chronic cholecystitis, which manifests as thickening of the gallbladder wall and may also challenge the diagnosis of gallbladder carcinoma.⁴ In the current study, there was a slight difference in the prevalence of cholecystectomy in women and men, and women were 10% more exposed to it than men. The prevalence rate of gallbladder carcinoma in cholecystectomy surgery was 1%, equal to the statistics reported from other studies (0.2-2.1%).¹⁸⁻²⁰ The rate of gallbladder carcinoma in women and men was 0.33% and 0.66%, respectively, which agrees with the outcomes of another study.¹¹ Generally, the gallbladder contains hormone receptors for estrogen and progesterone. Both these are female hormones and could be a possible explanation for the predisposition of women to gallstones as well as gallbladder carcinoma. The most common age of cholecystectomy was found to be 30-40 years old, which was very different from the most common age of affected people (over 65 years old).²¹ The most common age of people with gallbladder carcinoma was found to be over 55 years old, which was in agreement with the previous reports (over 50 years old).¹¹ Elevations in the gallbladder mucosa are known as gallbladder polypoid lesions. In our study, gallbladder polyp was observed in 7.8%, which agrees with the results of Lin *et al.*, who found the prevalence of polypoid lesions in the gallbladders between 0.3-12.3%.²² Also, calculous cholecystitis was observed in 2.6%, which agrees with the results of Haq *et al.*, who observed 4%.²³ The histopathological result of gall bladder after cholecystectomy was observed to be quite diverse. The present study detected acute cholecystitis in 40.4% of cases, while chronic cholecystitis was observed in 47.6%. The incidence of gallbladder carcinoma was found to be low, accounting for only 1% of cases. These findings are consistent with that reported by Memon *et al.*, who detected that





chronic cholecystitis was the most prevalent diagnosis, followed by acute cholecystitis/empyema of the gall bladder. Conversely, gallbladder carcinoma was rarely observed in their study.²⁴ The medical records of people in this study showed that 30.6% have hypertension, diabetes mellitus (18.24%), and hypercholestraemia (10.42%). Research indicates that there is a substantial correlation between gallstone disease and elevated susceptibility to developing diabetes,²⁵ gallbladder cancer,²⁶ and cardiovascular disease.²⁷

Conclusion

One of the most common tumours of the digestive tract is gallbladder cancer. Therefore, the histological analysis of cholecystectomy material is a dependable and widely accepted method for diagnosing hidden malignancies. The researchers strongly considered histological evaluation of all cholecystectomy specimens regardless of the macroscopic findings or radiological diagnosis. Old age and male gender were demographic risk factors for gallbladder cancer. Also, no significant relationship between gallbladder carcinoma and gallstones was observed.

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Conflict of interest

We declared that there is no conflict of interest.

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