

Assessment of the Development of Gastrointestinal Cancers in Individuals with a History of Cholecystectomy and Gallstone

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Abstract

Introduction: Gastrointestinal malignancies are dangerous diseases that many investigations about them have been done. Several factors have been discovered that increases their incidence. This study aims to introduce a new risk factor for GI malignancies occurrence.

Methods and material: In a case-controlled study documents of patients in the hospital were investigated for the history of cholecystectomy and presence of gall stone in GI cancer.

Results: Odds ratio for patients with a history of cholecystectomy compared to normal cases was 2.67. Also, the odds ratio for patients with the presence of gallstone was 9.65.

Conclusion: The result of this study confirms the increased risk of cancer in patients with gall bladder abnormalities. This may suggest a common etiology for the occurrence of GI cancers. Also, sustained flows of bile may disturb the GI lumen and predispose it to develop cancer.

Keywords: Gall bladder disease; cancer; cancer prevention; and cancer susceptibility

Introduction

A gastrointestinal (GI) cancer encompasses a wide variety of poor outcome diseases [1]. They are associated with high mortality and morbidity [2]. A great deal of attempts has been done to diagnose the causes of these malignancies. Factors such as gender, age, diet, and geographical regions have been associated with these cancers [3, 4].

Gallbladder disorders are also a wide range of diseases such as stones, malignancies, and infections [5]. In some cases, cholecystectomy is performed to treat the disease [6]. The overall opinion is to think cholecystectomy is the final treatment for some patients. The function of the gallbladder in the body is to help digestion of fat and other functions [7]. After cholecystectomy, it is considered that the gastrointestinal lumen will face an uncontrolled stream of bile [8].

This study aims to investigate the association of gastrointestinal cancers with gallbladder disorders and gallbladder function. Also, the possible danger of cholecystectomy in patients is investigated.

Methods and materials

Study design: In a case-controlled study, individuals were analyzed in a retrospective study for the history of cholecystectomy. Also, cases with the presence or history of gallbladder stones or other diseases were considered. Since, the individuals experienced the disease, no ethical concerns or committee approval was necessary.

Participant: In this retrospective study cases were analyzed based on their documents in the hospital settings. They were not examined directly. Also, the control group was considered based on common epidemiologic studies. 2% of the normal population was considered to have gallstones (15 persons).

Diagnostic method: Sonography was the method of choice for the assessment of the gallbladder. Some cases were assessed by CT scan.

Statistical analysis: Odds ratio was analyzed among the groups of study. Data were analyzed in two groups: individuals with a history of cholecystectomy and also individuals with gallbladder stones at the time of cancer diagnosis. They were analyzed separately.

Results

Cases with a history of cholecystectomy: Statistical analysis showed individuals with a history of cholecystectomy have an odds ratio of 2.67

for gastrointestinal cancers compared to the normal population (Tables 1 and 2).

Types of Malignancies	Population
Head of Pancreas	12
Colon	8
Gastric	4
Ampulla Vater	4
Hepatocellular	2
Tongue	2
Esophagus	2
Piriform	1
Klatskin	1
Duodenum	1
Cholangiocarcinoma	1
Lymphoma of Stomach	1

Table 1: Prevalence of different cancers in individuals with a history of cholecystectomy

People with a history of cholecystectomy	Population
Men	19
Women	20

Table 2: Distribution of different sexes in individuals with a history of cholecystectomy

Cases with the gallbladder stone: Statistical analysis showed Cases with the gallbladder stone has an odds ratio of 9.65 for gastrointestinal cancers compared to the normal population (Tables 3 and 4).

Types of Malignancies	Population
Head of Pancreas	34
Colon	23
Gastric	23
Liver	16
Esophagus	11
Gallbladder	11
Biliary tract	5
Tongue	2
Duodenum	1

Table 3: Prevalence of different cancers in individuals with gallbladder stone

People with a history of Gallbladder diseases	Population
Men	68
Women	58

Table 4: Distribution of different sexes in individuals with gallbladder stone

Discussion

In this study, it is shown that gallbladder removal is associated with gastrointestinal cancers. Also, there were cases with a history of gallbladder stones at the time of GI cancer surgery.

The basic assumption for this investigation is considering that after cholecystectomy the gastrointestinal lumen will face sustained exposure to bile. The result is the alternation of the GI lumen environment [8]. One proper hypothesis is to consider that the microbial flora of GI will be changed and this results in an increased production of toxic substances. However, after exploring more patients it is found out the GI lumen from mouth to anus will show an increased risk of GI cancers and this hypothesis will become weaker. However, it can be said after the production of toxic substances in the GI lumen the toxic materials may be absorbed and enter the bloodstream [9]. This results in an overall increase in GI cancer. Some individuals have abuse alcohol may worsen this condition [10]. Also, conditions that abrupt anatomical barriers may be involved in this case [11].

Also, we noted that in cases with a history of GI cancer, the risk becomes higher. After the formation of stone in the gallbladder, the normal

emptying of the gallbladder may be impaired. This may highlight the assumption that a more general mechanism may be involved and make the preexisting condition more complex. There are known factors that are common in gallbladder stones and cancers. Some are modifiable and some cannot be modified [5]. However, the presence of stone in the gallbladder at the time of cancer diagnosis may suggest a common factor for both cancer and stone.

Conclusion

This study showed an increased risk of gastrointestinal cancers in individuals with a history of cholecystectomy and gallstones. This may suggest common etiology or gall bladder may secrete protective agents against cancers.

Conflict of interest

This study was performed in the absence of no potential issue that may be considered a conflict of interest.

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