



Short Communication

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The Risk of Cholangiocarcinoma Following Cholecystectomy: A Retrospective Cohort Study in Albania (2014-2024)

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Introduction

To Cholecystectomy in Albania Cholecystectomy (surgical removal of the gallbladder) is one of the most common surgical procedures performed globally, primarily indicated for symptomatic cholelithiasis (gallstones) and acute cholecystitis. The provided statistical data, collected from the Statistical Service at the University Hospital Center in Tirana (Q.S.U.T), covers the period 2014–2024 and sheds light on the demographic distribution and frequency of this procedure in Albania, setting the stage for analyzing the subsequent risk of a rare but aggressive malignancy: cholangiocarcinoma (CCA).

Cholecystectomy Trends and Demographics in Albania

Statistical Overview (2014–2024) A total of 14,356 cholecystectomies was performed in Albania during the 11-year study period. The analysis revealed a significant gender imbalance:

Females: 9,564 cases (66.6%)

Males: 4,792 cases (33.4%)

This strong female predominance aligns with known predisposing factors for cholelithiasis and acute cholecystitis, such as female gender, parity, and hormonal factors. Age Distribution and Prevalence The average age of patients undergoing cholecystectomy was 55.0 years. However, a notable difference was observed between genders:

Females: Mean age was 53.4 years.

Males: Mean age was 58.2 years.

The fact that the average age for females is lower suggests an earlier onset and necessity for surgical intervention in this gender, reinforcing the role of inherent risk factors.

Table 1: The distribution by age group further detailed the population at risk:

Age Group	Frequency (Cases)	Percentage (%)
0-29 years	1,150	8.00%
30-64 years	8,876	61.80%
65+ years	4,330	30.20%

The 30-64 age group accounted for the vast majority of interventions, indicating that cholecystectomy is highly prevalent in the working-age population. The highest single-year number of procedures was recorded in 2018, with 1,847 cases. The Risk of Cholangiocarcinoma Following Cholecystectomy: A Retrospective Cohort Study in Albania (2014-2024).

Cholangiocarcinoma Incidence and the Post-Cholecystectomy Risk

Profile of Cholangiocarcinoma (CCA) Patients (20013–2023) CCA is a rare malignant pathology (incidence <1/100,000 inhabitants/year) with a high mortality rate. The study identified 143 cases of CCA between 2013 and 2023. The demographic profile of CCA patients showed a trend opposite to that of cholecystectomy:

Males: 84 cases (58.7%)

Females: 59 cases (41.3%)

The mean age for CCA was 60.3 years (61.4 for males, 58.6 for females). Crucially, the mean age of CCA onset was younger for females, again hypothesized to be related to higher rates of predisposing conditions like cholelithiasis or hepatolithiasis. The highest prevalence by age group for CCA was 30-64 years (58.0%), followed closely by the 65+ group (39.2%). The Link Between Cholecystectomy and CCA The core objective of the study was to quantify the risk of CCA development in patients who had undergone cholecystectomy.

Analysis of CCA Patients

Of the 143 patients diagnosed with CCA, 57 individuals (39.9%) had a history of prior cholecystectomy. This highlights a significant overlap between the two clinical histories.

Analysis of Cholecystectomy Cohort

A larger analysis of the 14,356 patients who underwent cholecystectomy revealed 128 subsequent cases (0.9%) of cholangiocarcinoma.

Standardized Incidence Ratio (SIR) The risk of developing CCA following cholecystectomy was quantified using the Standardized Incidence Ratio (SIR), which was 0.9% (with a 95% Confidence Interval [CI] of 0.8%–1.0%).

Interpretation

Finding implies that for every 1,000 individuals who undergo cholecystectomy, 9 of them may subsequently develop cholangiocarcinoma.

Risk Stratification While the overall risk remains low, the study identified specific subgroups with an elevated SIR:

Gender

The risk was slightly higher in males, with an SIR of 1.1% (CI 1.0%–1.3%). This means 11 out of 1,000 post-cholecystectomy male patients may develop CCA.

Age

The risk was highest in the 65+ age group, with an SIR of 1.3% (CI 1.2%–1.4%).

Conclusion

Conclusion and Hypothesis The study confirmed the initial hypothesis that cholecystectomy increases the risk of developing cholangiocarcinoma, specifically extrahepatic CCA, but not intrahepatic CCA. The finding suggests that the malignancy may not be a direct consequence of the surgery itself, but rather a manifestation of pre-existing, silent biliary pathologies (like chronic cholelithiasis or chronic inflammation) that damaged the mucosal epithelium and predisposed the patient to delayed malignancy, which became apparent years after the cholecystectomy. Suggestions Given the elevated risk in older men, post-cholecystectomy surveillance protocols should consider heightened vigilance for CCA in male patients aged 65 and above [1-9].

Acknowledgment

None.

Conflicts of Interest

None.

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