

Trends in Utilization and Analysis of Inpatient Outcomes for Benign Cholangitis: A Nationwide Inpatient Sample Analysis from 2010 to 2017

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Introduction

Cholangitis is a serious clinical syndrome of the hepatobiliary system, which can progress to sepsis, multiorgan failure and death. The aim of this study was to determine trends in patients hospitalized with benign cholangitis and factors associated with its inpatient outcomes.

Methods

The NIS database was used to identify hospitalized adult patients with cholangitis from 2010 to 2017 using ICD codes. Patients with malignancy of the gallbladder, bile duct, ampulla, duodenum or pancreas were excluded. Primary outcomes included the trend of prevalence, interventions, and inpatient outcomes. Secondary outcomes were factors that were independently associated with outcomes.

Results

Between 2010 and 2017, there was an uptrend of total benign cholangitis hospitalizations (33.3 to 38.1 per 10,000 US adults, $p < 0.0001$) with an annual prevalence change of 0.972 ($p < 0.0001$). An uptrend in benign calculous cholangitis was also observed ($p < 0.0001$). For biliary intervention, there were downtrends in ERCP, percutaneous and open biliary procedures ($p < 0.0001$). Outcomes also showed downtrends in mortality ($p = 0.0002$) and length of stay (LOS) ($p < 0.0001$) with an uptrend in total hospital charges ($p < 0.0001$). After adjusting for covariates, the mortality was significantly higher among African American patients, >40 years old (especially >70), with Medicaid insurance, high Elixhauser comorbidity index (ECI) and specific comorbid conditions such as acute pancreatitis, HCV infection, bile duct obstruction and septicemia compared to the reference group. Total hospital charges were higher, and LOS was longer among patients with high ECI and comorbid conditions such as cholecystitis, acute pancreatitis, HIV infection, bile duct obstruction and septicemia.

Conclusion

Between 2010 and 2017, there was an uptrend of benign cholangitis hospitalizations with an increased proportion of calculous cholangitis and a downtrend in biliary procedures. Overall mortality rates and LOS decreased, while the costs of hospitalization increased during this study period. Further analysis identified ethnic disparities in mortality. High ECI, comorbid pancreatic/biliary conditions, infection and septicemia were independently associated with worse outcomes.