Impact of Cannabis Use on Chronic Pancreatitis: A 10-Year Analysis of the National Inpatient Sample Database

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INTRODUCTION: Chronic pancreatitis (CP) is a debilitating chronic disease and significantly impacts patient’s quality of life. There is evidence that cannabinoids reduce markers of inflammation and fibrosis in pancreatic stellate cells. Cannabis is becoming increasingly popular and there are currently 33 states in the US that have approved medical cannabis while 10 states have approved cannabis for recreational use. We investigated the national trends in prevalence, mortality, length of stay (LOS), hospitalization charges and cost of chronic pancreatitis patients and compared between cannabis-exposed (CE) and non-cannabis-exposed (non-CE) patients.

METHODS: The National Inpatient Sample (NIS) database from 2005 to 2014 was queried for all patients with a primary discharge diagnosis of CP as per the International Classification of Diseases, 9th revision (ICD-9) code 577. Active exposure to cannabis was ascertained based on ICD-9 code 304.3X and 305.2X. We compared CE vs. non-CE patients. Outcomes included in-hospital mortality, length of stay (LOS), inflation adjusted charges and cost. Propensity match analysis for age, gender, race, median income quartile, hospital characteristics and Elixhauser comorbidity index and multivariable logistic regression models were performed using STATA 14 software.

RESULTS: Over 31,481 patients with CP as the primary diagnosis were analyzed. Cannabis-exposure prevalence was 1.4% (447 patients). The mean age of CP patients was 49. Patients exposed to cannabis were younger (42 vs 49 year-old, P < 0.001) and mostly male (69% vs 47.6%, P < 0.001). After adjusting for these factors, CE patients had lower total charges compared to non-CE (US$ 304.3X and 305.2X). We compared CE vs. non-CE patients. Outcomes included in-hospital mortality, greater length of stay and higher hospitalization charges in patients with AP. This was also associated with increased need for mechanical ventilation (65.5% vs 0.8%), and increased hospital charges ($237,082 vs $55,961). ARF was also associated with increased length of stay (19.9 days vs 6.4 days), increased need for mechanical ventilation (12% vs. 2.5%) and hepatic failure (13.8% vs. 2.3%). Patients with severe sepsis/septic shock are sicker with ARF compared to AP patients, but rather a significant proportion of patients with AP-ARF also had co-existing organ failures, mainly acute renal failure (56% vs. 10.1%), hemotological dysfunction (19.3% vs. 5.2%), cardiogenic shock (12% vs 2.5%) and hepatic failure (13.8% vs. 2.3%). Patients with severe sepsis/septic shock are the strongest predictor for developing ARF with an odds ratio (OR) of 9.5, followed by acute renal failure (OR 4.2), hepatic dysfunction (OR 2.4) and cardiogenic shock (OR 2.3). The occurrence of ARF was also associated with increased length of stay (19.9 days vs 6.4 days), increased need for mechanical ventilation (65.5% vs 0.8%), and increased hospital charges ($237,082 vs $55,961) compared to AP patients without ARF.

CONCLUSION: In this study, we demonstrate that ARF is a significant risk factor for increased hospital mortality, greater length of stay and higher hospitalization charges in patients with AP. This underlines significantly higher resource utilization in patients with a dual diagnosis of AP-ARF.

Predictors of Acute Respiratory Distress Syndrome in Patients Hospitalized With Acute Pancreatitis

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INTRODUCTION: Acute Pancreatitis (AP) has been associated with organ failures and systemic complications, with acute respiratory failure (ARF) being the most common followed by acute kidney injury (AKI). Population-based data on the effect of ARF in AP is limited. Previous studies are derived from single-tertiary care referral centers, which do not represent the community setting of all patients with AP, but rather a “sicker” group of patients. The aims of this study are: (1) to measure the prevalence of ARF in AP, (2) to analyze the trends of ARF in AP patients, (3) to investigate the clinical predictors for ARF in patients with AP, and (4) to measure the outcome comparisons such as length of stay in hospital, hospital cost, and mortality for patients with and without ARF.

METHODS: This is a retrospective cohort study using the National Inpatient Sample (NIS) database from the year 2003 to 2014. The study population consisted of all hospitalizations with a primary or secondary discharge diagnosis of AP using the ICD-9-CM code 577.0. Patients with ARF were identified through querying the ICD-9-CM codes 518.5, 518.81, or 518.82.

RESULTS: During the 10-year period from 2005 to 2014, there were approximately 4.2 million hospitalizations with a discharge diagnosis of AP, out of which 5.1% were associated with ARF. The mortality rate in patients with AP-ARF is 26.1% when compared with the overall mortality rate of 2% in AP patients. A significant proportion of patients with AP-ARF also had co-existing organ failures, mainly acute renal failure (56% vs. 10.1%), hemotological dysfunction (19.3% vs. 5.2%), cardiogenic shock (12% vs 2.5%) and hepatic failure (13.8% vs. 2.3%). Patients with severe sepsis/septic shock are the strongest predictor for developing ARF with an odds ratio (OR) of 9.5, followed by acute renal failure (OR 4.2), hepatic dysfunction (OR 2.4) and cardiogenic shock (OR 2.3). The occurrence of ARF was also associated with increased length of stay (19.9 days vs 6.4 days), increased need for mechanical ventilation (65.5% vs 0.8%), and increased hospital charges ($237,082 vs $55,961) compared to AP patients without ARF.

CONCLUSION: In this study, we demonstrate that ARF is a significant risk factor for increased hospital mortality, greater length of stay and higher hospitalization charges in patients with AP. This underlines significantly higher resource utilization in patients with a dual diagnosis of AP-ARF.