

Adverse Events following ERCP are higher in Patients with Chronic Pancreatitis

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Introduction

- Endoscopy retrograde cholangiopancreatography (ERCP) is frequently used for the management of chronic pancreatitis (CP) complications including pancreatic duct stones, strictures, and leaks.
- Previous studies have indicated a protective effect of chronic pancreatitis on rates and severity of post-ERCP pancreatitis.
- The aim of this study was to evaluate the risk of adverse events (AEs) in a large national cohort of patients with chronic pancreatitis who underwent ERCP.

Methods

- We queried the Explorys database (Cleveland, OH), comprised of electronic medical record data from 26 major U.S. healthcare systems.
- Adult patients, 18 years of age and older, with and without CP who underwent ERCP between 1999 and 2021 were identified based on systematized nomenclature of medicine-Clinical Terms (SNOMED-CT).
- Differences in baseline characteristics and demographics were analyzed using chi-square tests. Odds ratio analyses were performed between CP and non-CP patients for post-ERCP AEs within 30 days. We considered P-values less than 0.05 to be statistically significant.

Outcome *Within 30 days of ERCP	ERCP + Chronic Pancreatitis (n=13,270), n	ERCP + CP, %	ERCP + No CP (n=134,090), n	ERCP + No CP, %	Odds Ratio	CI (95%)	P-Value
30 day mortality	10	0.1%	20	0.0%	5.0562	2.3662, 10.8041	< 0.0001
Sepsis*	1,040	7.8%	8,970	6.7%	1.1441	1.0702, 1.2230	< 0.0001
Cholangitis*	1,780	13.4%	31,760	23.7%	0.4803	0.4563, 0.5056	< 0.0001
AKI*	1,040	7.8%	8,610	6.4%	1.1953	1.1180, 1.2780	< 0.0001
GI bleed*	590	4.4%	4,310	3.2%	1.3531	1.2392, 1.4774	< 0.0001
Acute pancreatitis (1-7 days)	890	6.7%	3,900	2.9%	2.3157	2.1483, 2.4961	< 0.0001
MI*	560	4.2%	4,070	3.0%	1.3594	1.2422, 1.4876	< 0.0001
Gender							Chi-square
Female	6,910	52.1%	81,370	60.7%			< 0.0001
Male	6,350	47.9%	52,690	39.3%			< 0.0001
Race							
White	10,110	76.2%	106,210	79.2%			< 0.0001
African American	2,160	16.3%	13,160	9.8%			< 0.0001
Asian	140	1.1%	2,040	1.5%			0.7041
Hispanic/Latino	120	0.9%	1,650	1.2%			0.7689
Age							
Adults (18-65y)	7,110	53.6%	77,960	58.1%			0.0001
Seniors (>65y)	6,090	45.9%	54,340	40.5%			0.0001
Co-morbidities							
Stroke	2,300	17.3%	19,310	14.4%			0.0002
CAD	3,490	26.3%	30,290	22.6%			< 0.0001
Cardiomyopathy	910	6.9%	6,920	5.2%			0.0329
CHF	1,990	15.0%	18,150	13.5%			0.0643
COPD	3,410	25.7%	22,350	16.7%			< 0.0001
PAD/PVD	5,060	38.1%	40,560	30.2%			< 0.0001
HTN	9,350	70.5%	80,980	60.4%			< 0.0001
HLD	7,480	56.4%	66,430	49.5%			< 0.0001
DM	6,100	46.0%	39,170	29.2%			< 0.0001
CKD	2,920	22.0%	23,140	17.3%			< 0.0001
ESRD	740	5.6%	4,040	3.0%			0.0003
Cirrhosis	1,540	11.6%	8,660	6.5%			< 0.0001
Alcohol abuse	2,550	19.2%	5,330	4.0%			< 0.0001
Tobacco abuse	4,760	35.9%	21,660	16.2%			< 0.0001
Obesity	3,360	25.3%	34,510	25.7%			0.612

Table 1: Outcomes (within 30 days), baseline characteristics, and co-morbidities in patients with and without chronic pancreatitis undergoing ERCP

Results

- A total of 147,360 patients who underwent ERCP were identified among whom 13,270 (9%) had a diagnosis of CP.
- Patients with CP were more likely to be males (47.9% vs. 39.3%, P<0.0001) and African American (16.3% vs. 9.8%, P<0.0001). CP patients had higher rates of co-morbid chronic obstructive pulmonary disease (27.5% vs. 16.7%, P<0.0001), diabetes mellitus (46.0% vs. 29.2%, P<0.0001), alcohol abuse (19.2% vs. 4.0%, p<0.0001), and tobacco abuse (35.9% vs. 16.2%).
- CP patients compared to non-CP patients who underwent ERCP had higher odds of adverse events within 30 days after procedure including mortality (OR 5.06, P<0.0001), sepsis (OR 1.14, P<0.0001), AKI (1.20, P<0.0001), GI bleed (OR 1.35, P<0.0001), and MI (OR 1.36, P<0.0001).
- Odds of acute pancreatitis within 7 days was also higher (OR 2.32, P<0.0001). Odds of cholangitis within 30 days was lower in the CP group (0.48, P<0.0001).

Conclusions

- CP patients compared to non-CP patients undergoing ERCP had higher odds of post-procedural adverse events.
- Contrary to prior data, rates of acute pancreatitis after ERCP were higher in the CP group.
- Differences in adverse events may be related to altered biliary and pancreatic ductal anatomy, pancreatic reserve, and comorbid conditions stemming from higher rates of tobacco and alcohol use in CP patients.
- Further studies are warranted to help clarify these associations and help to stratify the safety of CP patients undergoing ERCP.

