Chronic Pancreatitis and Risk of Atherosclerotic Cardiovascular Disease (ASCVD): A propensity matched cohort study

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BACKGROUND

- Worldwide prevalence of chronic pancreatitis (CP) has been increasing in recent years
- Chronic inflammation is a well-established risk factor for atherosclerosis
- Recent nationwide cohort study from Taiwan showed increased risk of ASCVD in CP, particularly in patients with alcohol-related illness, cirrhosis and diabetes
- There is limited data on risk of ASCVD in patients with CP in the US population

AIM

- Assess the risk of ASCVD and outcomes of ischemic heart disease in patients with CP compared to non-CP cohort

METHODS

- Real-time search and analysis of the U.S Collaborative Network in the TriNetX platform containing ~ 75 million patients from 48 health care organizations
- CP cohort (n=28,290): Adults ≥18 with ICD-10-CM codes for CP
  Non-CP cohort: Adults ≥ 18 without ICD-10-CM codes for CP
- Outcomes of ASCVD: Ischemic heart disease (IHD), cerebrovascular accident (CVA) and peripheral artery disease (PAD)
- Outcomes of IHD: Acute coronary syndrome (ACS), heart failure (HF), cardiac arrest and mortality
- Secondary outcomes: impact of aspirin 81 mg, statin and severe diabetes mellitus (use of insulin therapy)
- Propensity score matching was performed for age, gender, race, ethnicity, hypertension, hyperlipidemia, diabetes mellitus, nicotine dependence, BMI ≥ 30 and family history of IHD or CVA
- Risk expressed as adjusted odds ratio (aOR) with 95% confidence interval (CI)
- Kaplan-Meir survival curves for all-cause mortality were generated with log-rank tests after propensity-score matching

Table 1: Risk of ASCVD Expressed as adjusted Odds Ratios (aOR) With 95% Confidence Interval (CI) Between CP and non-CP Cohort

			Before propensity matching		After propensity matching
Cohort	Outcome	N (%)	OR (95% CI)	N (%)	aOR (95% CI)
CP	Ischemic heart disease	6314 (22.9)	1.97 (1.91 – 2.02)	6312 (22.9)	**1.08 (1.03–1.12)**
	Cerebrovascular accident	2411 (8.7)	1.67 (1.60 – 1.74)	2411 (8.7)	**1.12 (1.05–1.20)**
	Peripheral artery disease	2599 (9.4)	2.13 (2.05 – 2.22)	2599 (9.4)	**1.17 (1.10–1.24)**

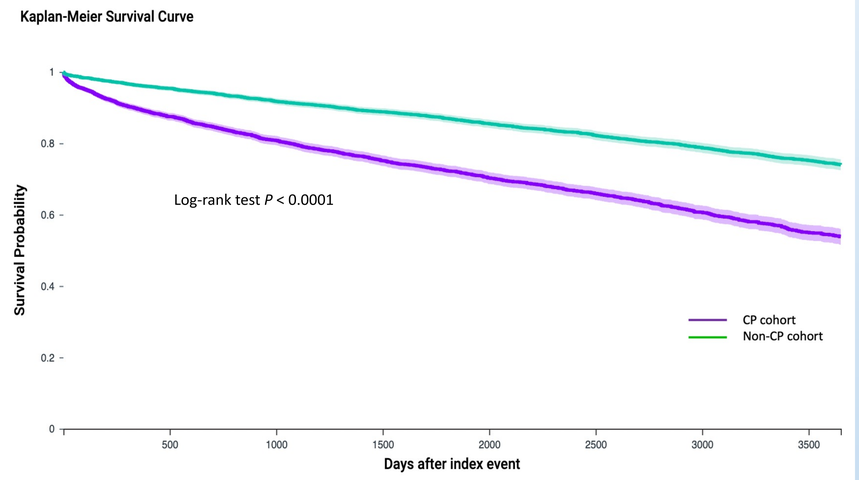
Table 2: Outcomes of Ischemic Heart Disease Expressed as adjusted Odds Ratios (aOR) With 95% Confidence Interval (CI) Between CP and non-CP Cohort

		Before propensity matching		After propensity matching
Outcome	N (%)	OR (95% CI)	N (%)	OR (95% CI)
Acute coronary syndrome	901 (21.4)	1.53 (1.42–1.64)	894 (21.4)	**1.16 (1.04–1.30)**
Heart failure	1447 (34.4)	1.44 (1.35–1.53)	1437 (34.4)	0.95 (0.86–1.04)
Cardiac arrest	214 (5.0)	2.34 (2.03–2.68)	212 (5.0)	**1.24 (1.01–1.53)**
Mortality	1230 (29.2)	1.63 (1.52–1.74)	1226 (29.3)	**1.60 (1.45–1.77)**

Table 3: Outcomes of Ischemic Heart Disease Between CP and non-CP cohort Based on Different Medications prior to the development of Ischemic Heart Disease

Medication	Outcome	Cohort	N (%)	aOR (95% CI)
Aspirin	Acute coronary syndrome	CP	455 (20.4)	**1.31 (1.12–1.53)**
	Heart failure	CP	766 (34.4)	1.01 (0.89–1.15)
	Cardiac arrest	CP	92 (4.1)	**1.45 (1.05–2.01)**
	Mortality	CP	578 (26.0)	**1.74 (1.50–2.01)**
Statin	Acute coronary syndrome	CP	158 (20)	1.24 (0.96–1.60)
	Heart failure	CP	264 (33.4)	1.07 (0.86–1.32)
	Cardiac arrest	CP	30 (3.7)	1.07 (0.63–1.81)
	Mortality	CP	178 (22.5)	**1.47 (1.14–1.89)**
Insulin	Acute coronary syndrome	CP	1094 (19.2)	0.99 (0.90–1.09)
	Heart failure	CP	1893 (33.3)	0.83 (0.77–0.89)
	Cardiac arrest	CP	310 (5.4)	**1.23 (1.04–1.46)**
	Mortality	CP	1547 (27.2)	**1.40 (1.29–1.53)**

Figure 1: Comparison of Kaplan-Meier survival curves for all-cause mortality between CP and non-CP cohorts



DISCUSSION

- Patients with CP are at an increased risk for ASCVD compared to patients without CP after matching for confounding variables
- Similarities exist in the pro-inflammatory cascade and progressive endothelial changes between CP and ASCVD
- While statin use was protective against ACS and cardiac arrest, aspirin use did not confer protection
- Routine healthcare maintenance in these patients should focus on cardiovascular risk assessment as well as timely diagnostic and therapeutic interventions to prevent adverse outcomes

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