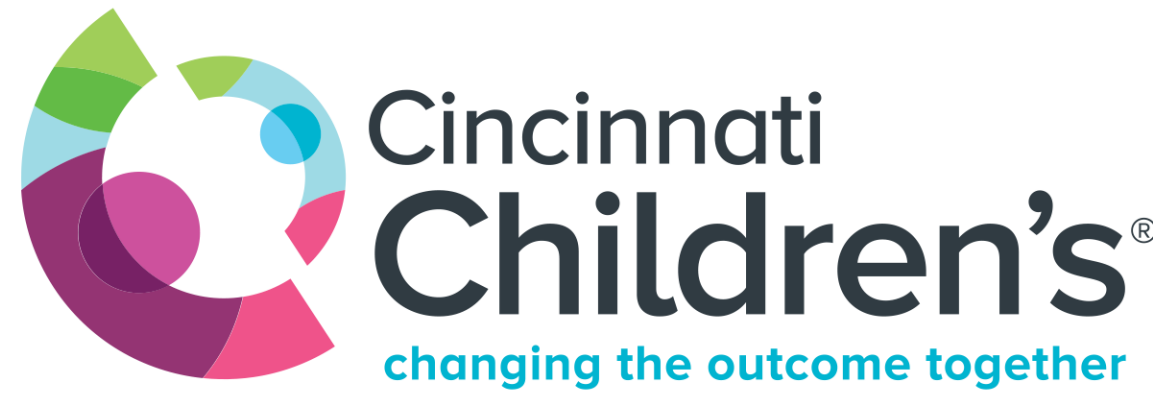


Etiology Derives Outcomes During And After The First Episode Of Acute Pancreatitis: An Observational Cohort Study

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Introduction

- Most studies on pediatric acute pancreatitis (AP) outcomes are based on retrospectively collected datasets. To our knowledge, no prospective studies have looked at symptom persistence beyond hospitalization following the first episode of AP.
- Our study aimed to use a prospectively enrolled cohort, along with yearly follow-up questionnaires, to investigate gastrointestinal symptom persistence and acute recurrent pancreatitis (ARP) incidence following first attack AP.

Hypothesis and Aims

Hypothesis: In-hospital and after-hospital clinical outcomes will vary by etiology of pancreatitis.

- Aim 1:** Identify rates of severe acute pancreatitis (SAP) by etiology, along with ICU admission by etiology
- Aim 2:** Identify if progression to acute recurrent pancreatitis (ARP) varies by etiology
- Aim 3:** Determine rates of persistent GI symptoms and if this varies by etiology

Methods

- 322 subjects prospectively enrolled in a REDCAP database from March 2013 to May 2023 during first episode of AP
- Outcome data were collected (ICU admission, AP severity, surgical intervention).
- Etiology groups were made based on information available during admission that could be identified with history or routine imaging studies
- One-year follow-up survey (abdominal pain, readmission, nausea, vomiting, and weight loss) along with lab collection (endocrine and exocrine pancreatic labs)

Methods (continued)

	AP patients n=322
Age 1 st AP attack (years)	13.5 (8.5-16.1)
Sex	
Female	161 (50%)
Male	161 (50%)
BMI percentile	70.2 (30.6-94.0) n=305
Severity 1 st AP attack	
Mild	244/318 (77%)
Moderate	52/318 (16%)
Severe	22/318 (7%)
Etiology	
Toxic/Metabolic/Autoimmune	75 (23%)
Gallstones	52 (16%)
Obstructive non-gallstone	22 (7%)
Trauma/Post ERCP Pancreatitis	23 (7%)
Known genetic*	39 (12%)
Idiopathic	111 (34%)
Family history of pancreatitis	31/246 (13%)
Other comorbid conditions	199/319 (62%)
Oral antidiabetics or require insulin	14/321 (4.4%)
ICU during admission	40/312 (13%)
Surgical therapies done	49/321 (15%)
Local pancreatic complication	47 (15%)
Organ dysfunction	25 (8%)
ARP	81 (25%)
ARP age (years)	13.8 (9.3-16.3) n=81
Time AP to ARP (months)	3.4 (1.7-8.5) n=81
ARP within 1 year of AP	69/81 (85%)

Data presented as median (25th-75th percentile) or n (%).
*Not all patients underwent genetic testing

Table 1: Demographic data of subjects

Results

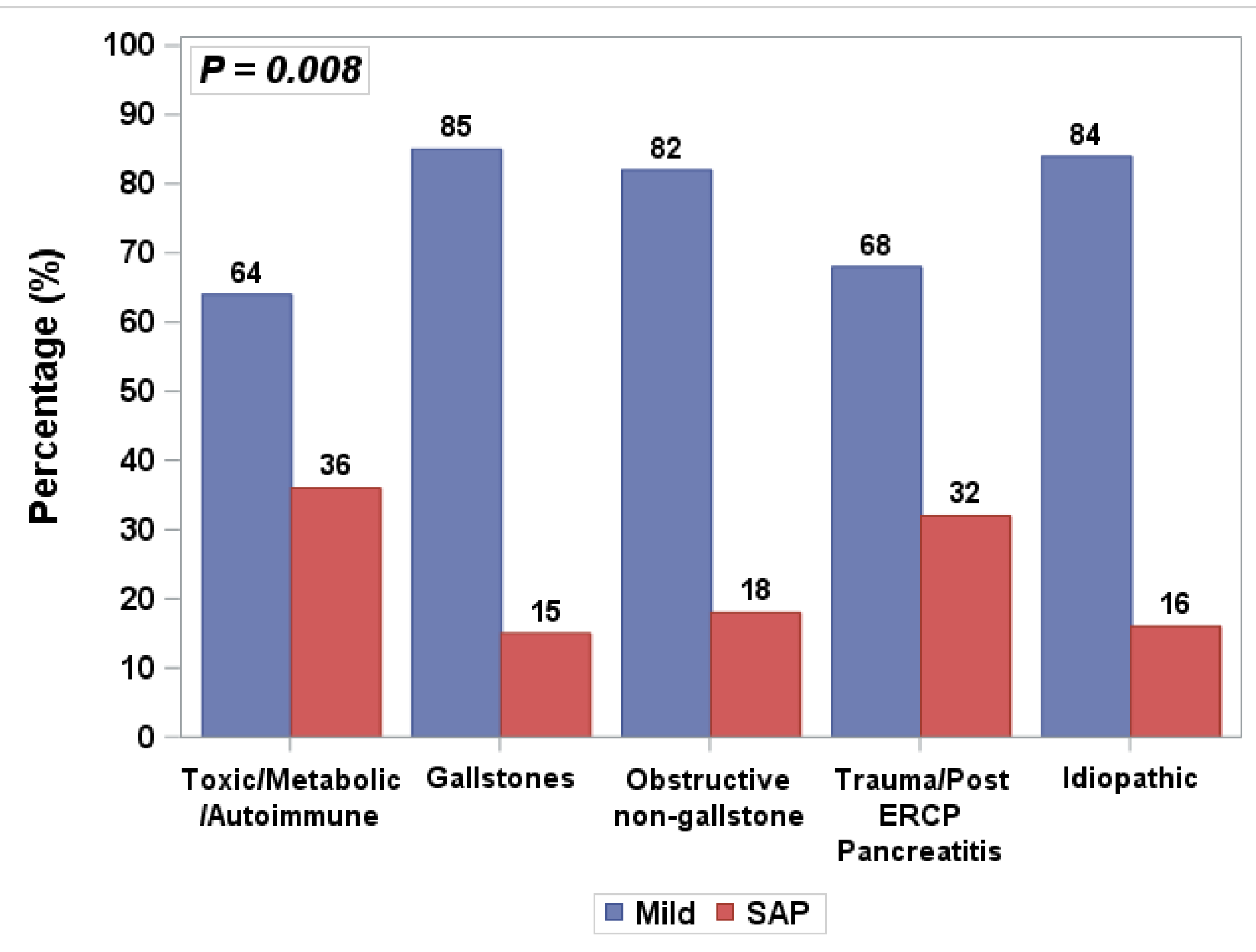


Fig 1: Overall rates of SAP by etiology

- The highest incidence of moderate and severe AP was in the toxic/metabolic/autoimmune, along with the Trauma/post-ERCP group (P=0.008). In this figure, both moderate and severe AP were grouped together under "SAP" with the definitions derived from the NASPGHAN pancreas committee.

Results (continued)

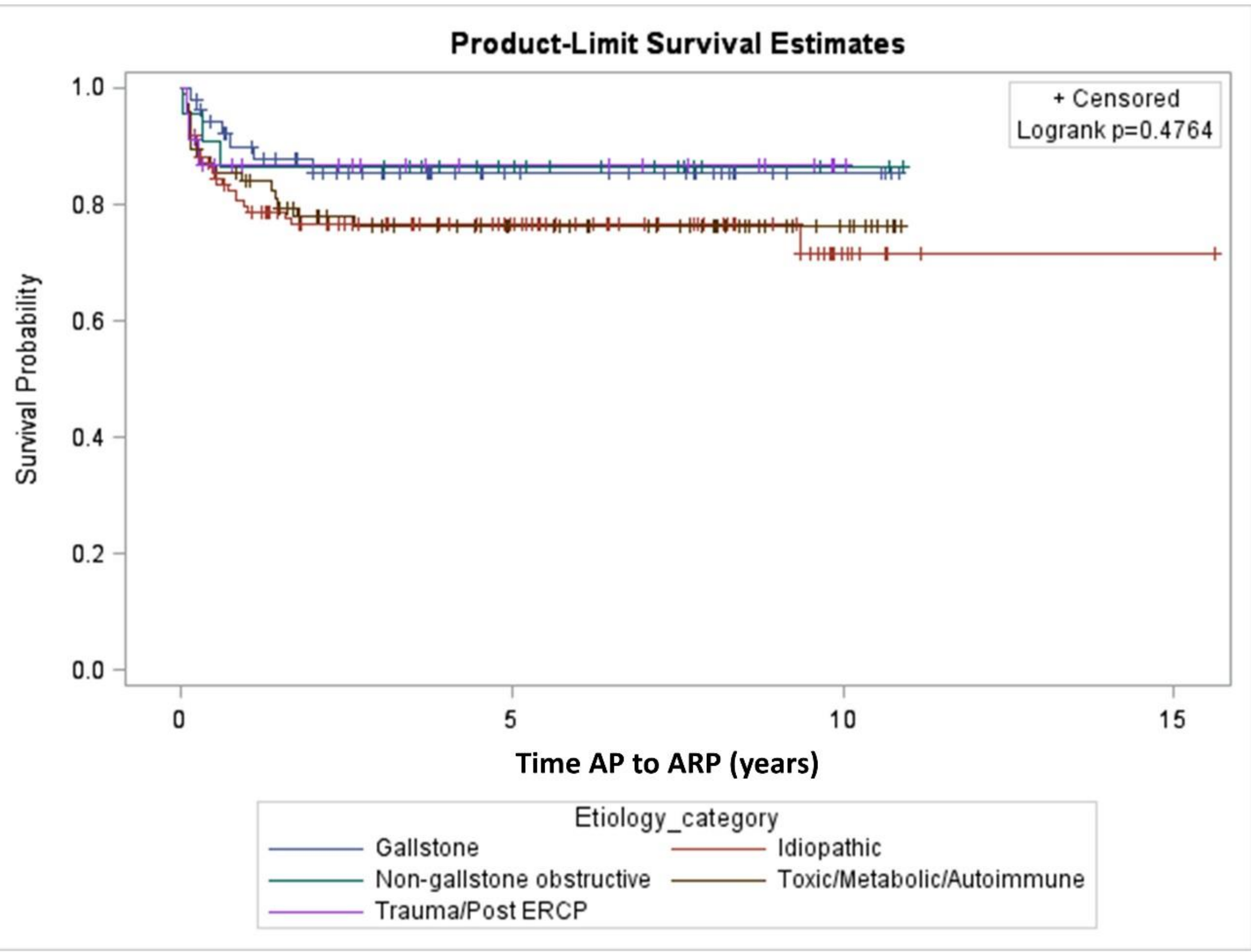


Fig 2: ARP time to second attack by etiology

- There is no statistical difference in progression to ARP when grouped by etiology. Of note, patients with a strong family history of AP were often referred for genetic testing in our cohort and were excluded from this analysis as not all patients had genetic testing done.

	Toxic/Metabolic/ Autoimmune n=75	Gallstone n=52	Non- gallstone obstructive n=22	Trauma/ Post ERCP n=23	Idiopathic n=111	P- value
Admitted to hospital for AP attack	7/43 (16%)	4/22 (18%)	3/15 (20%)	3/12 (25%)	12/52 (23%)	0.91
Suspected AP episode managed at home	14/44 (32%)	3/21 (14%)	2/15 (13%)	4/12 (33%)	21/51 (41%)	0.12
Abdominal pain within 1 year of AP	14/44 (32%)	4/21 (19%)	5/15 (33%)	7/12 (58%)	28/51 (55%)	0.02
Vomiting within 1 year of AP	22/43 (51%)	7/21 (33%)	6/15 (40%)	3/12 (25%)	28/49 (57%)	0.17
Diarrhea within 1 year of AP	14/43 (33%)	5/21 (24%)	6/15 (40%)	6/12 (50%)	26/49 (53%)	0.13
Weight loss within 1 year of AP	12/43 (28%)	3/21 (14%)	6/15 (40%)	5/12 (42%)	15/49 (31%)	0.37

Table 2: one year follow-up survey results

- At one year follow-up, both traumatic/post-ERCP and idiopathic had the highest rates of persistent abdominal pain, with over half of participants reporting abdominal pain during the prior year.

Results (Continued)

	Toxic/Metabolic/ Autoimmune n=75	Gallstones n=52	Obstructive non-gallstone n=22	Trauma/Post ERCP Pancreatitis n=23	Idiopathic n=111	P- value
Age 1 st AP attack (years)	13.9 (7.9-16.4)	15.3 (13.2-17.0)	9.8 (5.7-14.6)	12.5 (8.4-16.2)	13.6 (10.0-16.4)	0.02
Sex						0.02
Female	31 (41%)	32 (62%)	15 (68%)	7 (30%)	57 (51%)	
Male	44 (59%)	20 (38%)	7 (32%)	16 (70%)	54 (49%)	
BMI percentile	62.3 (25.2-87.9) n=74	95.4 (56.6-98.2) n=49	58.3 (10.6-83.7) n=20	66.5 (40.1-91.5) n=21	75.7 (27.2-94.9) n=106	0.002
Family history of pancreatitis	2/51 (4%)	1/39 (3%)	1/17 (6%)	0/16 (0%)	14/90 (16%)	0.051
Other comorbid conditions	62 (83%)	31 (60%)	15 (68%)	10/22 (45%)	60/109 (55%)	0.0008
Oral antidiabetics or require insulin	10 (13%)	0 (0%)	0 (0%)	0 (0%)	4/110 (4%)	0.007
ICU during admission	20 (27%)	2 (4%)	4 (18%)	3 (13%)	9/106 (8%)	0.001
Surgical therapies done	1 (1%)	33 (63%)	7 (32%)	6 (26%)	0/110 (0%)	<0.0001
Severity 1 st AP attack						
Mild	47/74 (64%)	44 (85%)	18 (82%)	15/22 (68%)	92/109 (84%)	
Moderate	16/74 (22%)	6 (12%)	1 (5%)	6/22 (27%)	13/109 (12%)	
Severe	11/74 (15%)	2 (4%)	3 (14%)	1/22 (5%)	4/109 (4%)	
SAP	27/74 (36%)	8 (15%)	4 (18%)	7/22 (32%)	17/109 (16%)	0.008
Local pancreatic complication	14 (19%)	5 (10%)	2 (9%)	3 (13%)	13 (12%)	0.59
Organ dysfunction						0.01
Respiratory	13 (17%)	2 (4%)	2 (9%)	1 (4%)	4 (4%)	
Renal	9 (12%)	2 (4%)	2 (9%)	2 (9%)	2 (2%)	
Cardiovascular	5 (7%)	0 (0%)	0 (0%)	0 (0%)	2 (2%)	
Other	2 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Both local complication & organ dysfunction	1 (1%)	0 (0%)	1 (5%)	0 (0%)	0 (0%)	
ARP	2 (3%)	0 (0%)	1 (5%)	0 (0%)	2 (2%)	0.56
ARP age (years)	17 (23%)	7 (13%)	3 (14%)	3 (13%)	26 (23%)	0.49
ARP age (years)	16.0 (14.5-16.9) n=17	14.3 (9.3-20.8) n=7	15.5 (9.8-18.7) n=3	14.7 (11.8-19.5) n=3	13.7 (10.9-16.9) n=26	0.78
Time AP to ARP (months)	3.1 (1.7-16.5) n=17	7.6 (3.0-13.2) n=7	4.1 (0.3-7.3) n=3	1.5 (1.1-3.2) n=3	3.6 (1.6-9.9) n=26	0.42
ARP within 1 year of AP	12/17 (71%)	5/7 (71%)	3/3 (100%)	3/3 (100%)	23/26 (88%)	0.45

Table 3: table of inpatient and outpatient outcomes by etiology

Conclusion and Future Directions

- Clinical course varied by etiology, both during and after initial hospitalization.
- Trauma/post-ERCP pancreatitis had both a high rate of morbidity during the Initial attack of AP as well as statistically significant higher occurrence of abdominal pain in the one-year follow-up.
- Overall persistence of GI symptoms for the following year was high, though did not vary by etiology
- Future studies will examine the relationship between the development of endocrine and exocrine pancreatic dysfunction and initial attack etiology.

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