

The development of post-pancreatitis diabetes mellitus (PPDM) is not associated with adverse outcomes: Experience from a UK tertiary referral centre.

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Introduction

- Patients with acute pancreatitis (AP) are at increased risk of developing post pancreatitis diabetes mellitus (PPDM) (type 3c diabetes mellitus (DM)).
- Previous studies have identified that presence of DM pre-AP is associated with adverse outcomes.
- The aim of this study was to investigate the incidence, aetiology and sequelae of PPDM in a single tertiary referral centre in the UK.

Methods

- A prospectively collected single centre database was analysed.
- Severity of AP was classified according to the revised Atlanta criteria.
- Patients were grouped according to whether they had DM or not.
- Patients with DM were further sub-grouped as to whether they developed PPDM or had DM prior to the episode of AP.
- The primary outcome was the incidence of PPDM in mild moderate and severe AP.
- Secondary outcomes included all cause mortality, admission to ITU, over-all LOS and the development of pancreatitis specific complications.

Results

- 401 patients admitted with AP between 2018 and 2021 were identified.
- The median age was 58 (47-69) years.
- 246 of patients (61%) were male.
- 63 patients (15.7%) had mild AP, 215 patients (53.6%) had moderate/severe AP and 123 patients (30.7%) had severe AP.
- 114 patients (28.4%) were admitted to ITU and 66 patients (16.5%) died during the follow-up period.
- 38 patients (11%) developed PPDM (4 mild, 19 moderate and 15 severe, p=0.326)
- 71% of patients developing PPDM required lifelong insulin therapy.
- The development of PPDM was strongly associated with the presence (p<0.001) and extent (p<0.001) of pancreatic necrosis
- On multi-variate analysis, the development of PPDM was not an independent predictor of mortality, admission to ITU or overall LOS

Conclusions

The development of PPDM is strongly associated with the extent of necrosis but does not adversely affect pancreatitis specific outcomes

	No DM		All DM		ALL DM vs No DM P Value	Pre-existing DM		Pre-existing DM vs No DM P Value	New DM		New DM vs No DM P Value
Total (n)	299		102			64			38		
Atlanta Classification*											
- 0	45	15.1%	18	17.6%	0.531	14	21.9%	0.193	4	10.5%	0.626
- 1	170	56.9%	45	44.1%	0.029	26	40.6%	0.019	19	50.0%	0.489
- 2	84	28.1%	39	38.2%	0.062	24	37.5%	0.175	15	39.5%	0.185
Necrosis	175	58.5%	72	70.6%	0.034	38	59.4%	1.000	34	89.5%	<0.001
0%	129	43.1%							4	10.5%	
1-24%	57	19.1%							4	10.5%	
25-49%	67	22.4%							7	18.4%	<0.0001
50-74%	49	16.4%							10	26.3%	
75-100%	33	11.0%							13	34.2%	
Head	17	5.7%							2	5.3%	
Neck	9	3.0%							2	5.3%	
Body	12	4.0%							1	2.6%	0.085
Tail	18	6.0%							3	7.9%	
Throughout	150	50.2%							26	68.4%	
Pancreatic ascites	52	17.4%	14	13.7%	0.442	4	6.3%	0.022	10	26.3%	0.187
PV/SMV thrombus	20	6.7%	7	6.9%	1.000	2	3.1%	0.392	5	13.2%	0.180
ICU Admission	78	26.1%	36	35.3%	0.076	22	34.4%	0.167	14	36.8%	0.179
Number of organs requiring support											
- 0	232	77.6%	71	69.6%	0.111	43	67.2%	0.107	28	73.7%	0.546
- 1	41	13.7%	19	18.6%	0.260	11	17.2%	0.439	8	21.1%	0.226
- 2	26	8.7%	12	11.8%	0.433	10	15.6%	0.107	2	5.3%	0.754
Dialysis	31	10.4%	20	19.6%	0.016	15	23.4%	0.007	5	13.2%	0.571
Mechanical Ventilation	63	21.1%	23	22.5%	0.676	16	25.0%	0.502	7	18.4%	1.000
Overall LOS (days)*	19 (3-294)		22 (2-210)		0.127	22 (3-203)		0.407	23.5 (2-210)		0.108
Exocrine insufficiency	199	66.6%	81	79.4%	0.010	49	76.6%	0.095	32	84.2%	0.022
Readmission with Acute Pancreatitis	46	15.4%	18	17.6%	0.641	11	17.2%	0.851	7	18.4%	0.636
Death	52	17.4%	14	13.7%	0.442	11	17.2%	1.000	3	7.9%	0.165
Days to death/alive	675 (7-1466)		687.5 (3-1473)		0.917	570 (3-1473)		0.415	852 (17-1468)		0.199

Table 1: Short and long-term outcomes of patients with no DM, pre-existing DM and PPDM.. (Abbreviations: ICU – Intensive Care Unit, LOS – Length of Stay, PV – Portal Vein, SMV – Superior Mesenteric Vein.)

Covariate	Univariate P value	Multivariate estimate (Std. Error)	Multivariate P value
Age (years)	0.657		
Gender (M:F)	0.052		
Previous Pancreatitis	0.098		
HTN	0.753		
IHD	1.000		
COPD	0.490		
Cerebrovascular disorder	1.000		
Smoker	0.316		
Aetiology	0.375		
Premorbid ECOG Score	0.062		
Atlanta Classification	0.437		
Necrosis	<0.001	0.011 (0.051)	0.827
Exocrine insufficiency	0.022	0.0452 (0.033)	0.170
Percutaneous Necrosectomy	0.313		
Endoscopic Necrosectomy	0.217		
CT Severity Index Group	0.001	0.025 (0.011)	0.028

Table 2: Linear regression model to identify risk factors for the development of PPDM