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Development of a clinical score to estimate pancreatitis-related hospital admissions in patients with a new diagnosis of chronic pancreatitis: The Trinity Score

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Background

Chronic pancreatitis is a fibro-inflammatory disorder that results in loss of endocrine and exocrine function. The clinical course is unpredictable and there is no globally accepted score to predict the disease course[1].

Aim

To develop a clinical score to estimate pancreatitis-related hospitalisation in patients with newly diagnosed chronic pancreatitis.

Method

- We conducted a retrospective cohort study using two clinical chronic pancreatitis databases held in tertiary referral centres in Ireland and Spain.
- Individuals diagnosed with chronic pancreatitis between 2007 and 2014 were eligible for inclusion.
- Candidate predictors included aetiology, body mass index (BMI), endocrine dysfunction, exocrine dysfunction, smoking and alcohol history.
- Multivariable logistic regression was used to develop the model

Results

Outcome	Dublin (n=98)	Tarragona (n=56)	P-value
Patients (n) with zero pancreatitis-related admissions in 6 years post diagnosis, n (%)	24 (24)	25 (45)	0.010ε*
Number of pancreatic-related hospital admissions	**Median (IQR)**	**Median (IQR)**	
Number of pancreatitis-related admissions in 6 years post diagnosis	2 (1-3)	1 (0-3)	0.107φ
Number of pancreatic-related admissions per year in 6 years post diagnosis	0.33 (0.16-0.5)	0.17 (0-0.5)	
Hospital LOS for pancreatitis-related admissions	**Median (IQR)**	**Median (IQR)**	
Pancreatitis-related hospital LOS in 6 years post diagnosis	17 (2-31)	6 (0-26.5)	0.029φ*
Pancreatitis-related hospital LOS per year in 6 years post diagnosis	2.83 (0.33-5.17)	1 (0-4.41)	

Table 1 Hospital admissions and length of stay for patients with newly diagnosed chronic pancreatitis in Dublin and Tarragona
ε Compared using χ^2analysis; φ compared using Mann-Whitney U test

We analysed data from 154 patients with newly diagnosed chronic pancreatitis. Of these, 105 patients (68%) had at least one hospital admission for pancreatitis-related reasons in the 6 years following diagnosis. The median number of hospital admissions was 1 and the median length of stay was 14 days. Data comparing Ireland and Spain are shown in Table 1.

Results

Aetiology of chronic pancreatitis, BMI, use of pain medications, and gender were found to be predictive of more pancreatic-related hospital admissions.

These predictors were used to develop a clinical score (Table 2) which showed acceptable discrimination (area under the ROC curve=0.70).

Aetiology		BMI		Pain Medications	
Idiopathic/Other	0 points	Normal weight	0 points	No regular pain medication	0 points
Alcoholic	1 point	Underweight	3 points	Paracetamol/ NSAIDS	5 points
Biliary	2 points	Overweight	3 points	Weak Opioids	3 points
		Obese	2 points	Strong Opioids	5 points
If male gender, add 1 point					
0-3 points		**0-3 points**		**0-6 points**	

Table 2 The Trinity Score: a clinical score to estimate pancreatitis-related hospital admissions in patients with a new diagnosis of chronic pancreatitis

Conclusion

We developed a clinical score for newly-diagnosed patients with chronic pancreatitis to predict risk of pancreatitis-related hospitalisation in the six years following diagnosis.

The score has the potential to identify patients at the time of diagnosis that have risk factors for future hospital admission. **This information can be used to stratify risk, inform treatment, and to allow for timely referrals to the wider multidisciplinary team (e.g. dietetics, pain management and endocrinology). Using the clinical score to highlight those at high risk of hospital admission can facilitate planning interventions to reduce or avoid costly hospital admissions.** Further prospective research is needed to evaluate the utility and validity of this scoring system in other clinical settings.

References: 1. Rahman A, O'Connor DB, Gather F, Koscic S, Gilgan J, Mockler D, Bashir Y, Memba R, Duggan SN, Conlon KC. Dig Surg. 2020;37(3):181-191. doi: 10.1159/000501429.