

Profile of acute pancreatitis in Jizan, Saudi Arabia

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ABSTRACT

Objective: The epidemiology of acute pancreatitis in the Kingdom of Saudi Arabia (KSA) may be different from the West. The present study describes the profile of acute pancreatitis in Jizan, KSA.

Methods: Patients diagnosed as acute pancreatitis in the King Fahd Central Hospital (KFCH), Jizan, KSA over a period of 12 years (1411-1422 Hijra year) were retrospectively analyzed with particular reference to the clinical features, disease severity, and result on management.

Results: There were 71 episodes in 62 patients (26 males and 36 females; 53 Saudis, whose ages ranged from 13-82 years (mean age: 42.6 years.). Of these patients, 5 had 2 episodes each one had 5 recurrent episodes. The etiology included gallstone disease in 26 (42%) cases; endoscopic retrograde cholangiopancreatography (ERCP) in 11 (18%) cases. No cause could be identified in 16 (26%). Patients with ERCP - related pancreatitis were asymptomatic. In the symptomatic group (60 episodes), abdominal pain (100%), vomiting (78%) and fever (20%) were the most frequent

features. Overall the clinical course was mild in 61 (86%) episodes and severe in 10 (14%). Ranson's scoring accurately identified 60 of the 61 mild episodes and only 6 of the severe illness. Complications in the latter sub-group of cases, included pseudocyst (4 cases) and pancreatic abscess in 2 cases. Three of the patients died, giving overall mortality of 4.2%. Two deaths were directly related to the severe pancreatitis and one was due to massive vomiting and aspiration.

Conclusions: It is concluded that 1. Cholelithiasis is the most frequent cause of acute pancreatitis; 2. Biliary pancreatitis occurred more frequently in elderly females and was associated with higher mean levels of lactic dehydrogenase and aspartate transaminase as compared to patients with non-biliary causes. In Jizan, acute pancreatitis presents in a mild form with low morbidity and mortality, irrespective of the cause.

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Acute pancreatitis is an inflammatory condition of the pancreas with a highly variable clinical presentation, etiology, and severity.¹ In approximately 80% of the patients, the course is mild and self-limiting with complete recovery on conservative management. In the remaining 20%, however, the disease is severe, often fulminant and associated with organ failure and significant mortality.² It is therefore, important to identify these severe cases early in the course and implement intensive multidisciplinary management

involving gastroenterologists, surgeons, intensivists, anesthetists, and radiologists. The incidence of acute pancreatitis in the western countries has been reported to vary between 10-50 per 100,000 population per year.³ However, there are very few reports from Arab countries in general and the Kingdom of Saudi Arabia (KSA) specifically.⁴⁻⁶ This study was, therefore, carried out to describe the profile of acute pancreatitis in the Jizan region, a South-western province in KSA with a population who are non-alcoholic.

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Methods. Over a period of 12 years (1411-1422 Hijra year), 62 patients with acute pancreatitis treated at the King Fahd Central Hospital, Jizan, KSA were retrospectively analyzed. The diagnosis of acute pancreatitis was based on a rise in serum lipase/amylase of >3 times the upper limit of normal.² For each patient demographic parameters, etiology of pancreatitis, clinical features, disease severity, and outcome on management were analyzed. The severity of acute pancreatitis was assessed in each case using the Ranson's criteria⁷ at admission and at 48 hours. The episode was considered severe if >3 criteria were present, or if there was a local complication like pseudocyst/abscess formation, or evidence of organ failure.^{8,9} The statistical analysis was carried out using the student t-test for comparison of means and chi-square test for proportions.

Results. A total of 71 episodes of acute pancreatitis occurred in 62 patients. Fifty-six patients had a single episode each while 5 patients had 2 episodes and one patient had 5 recurrent episodes, the latter being associated with hypertriglyceridemia. Gallstone disease was the highest (44%) cause of acute pancreatitis (biliary) followed by idiopathic (24%) and endoscopic retrograde cholangiopancreatography (ERCP) induced in 18% of cases (Table 1). Co-morbidities including diabetes mellitus, pregnancy, ischemic heart disease, chronic renal failure, chronic liver disease, abdominal tuberculosis, sickle cell anemia, were associated in 21 (35%) patients. Patients with post-ERCP pancreatitis (N=11) presented only with asymptomatic rise in serum amylase levels. In the remaining 60 episodes, abdominal pain (100%), epigastric tenderness (91%), vomiting (75%), fever (20%) were the common presenting features at presentation. When these cases were studied in relation to the etiology (Table 2), it was found that biliary pancreatitis occurred significantly ($p < 0.05$) more frequently in elderly females when compared to patients with nonbiliary pancreatitis. Moreover, patients with biliary pancreatitis showed a tendency to have significantly higher mean levels of lactate dehydrogenase (LDH) (429 ± 209.7 versus 245 ± 130.2 IU/ml) and aspartate transaminase (AST) (200.6 ± 140.8 versus 98.5 ± 60.6 IU/ml). To determine the potential for using LDH levels in discriminating biliary from non-biliary pancreatitis, the sensitivity, specificity, positive predictive value (PPV), and the negative predictive value (NPV) was found to be 50%, 94%, 92%, and 54%. The cut-off level for the calculation was taken as $>2 \times$ upper limit of normal (ULN) for example >380 IU/ml. A similar analysis for AST (cut-off $3 \times$ ULN) revealed the values to be 66%, 65%, 71%, and 60%.

The ultrasound examination was obtained in 65 episodes. It showed normal pancreas (16), bulky pancreas (27), and gallstones (26), 4 of which were associated with CBD stones. Computerized tomography (CT) examination was performed in 61 episodes and

Table 1 - Etiology of acute pancreatitis (N=62).

Etiology	N (%)
Gall stone disease	26 (41.9)
Idiopathic	16 (25.8)
Post ERCP	11 (17.7)
Drug induced	3 (4.8)
Mumps	2 (3.2)
SLE	1 (1.6)
Homocystinuria	1 (1.6)
Carcinoma	1 (1.6)
Hypertriglyceridemia	-

ERCP - endoscopic retrograde cholangiopancreatography
SLE - systemic lupus erythematosus

Table 2 - Profile of acute pancreatitis (biliary versus non-biliary).

Parameters against	Biliary (N=32)	Non-biliary (N=28)	Total (N=60)
Age (Years)	51.0 \pm 17.0	38.3 \pm 17.1**	45.8 \pm 17.2
Sex (M:F)	11:21	14:14**	25:35
Associated diseases	11 (34.4)	12 (42.8)	23 (38.3)
Pain abdomen	32 (100)	28 (100)	60 (100)
Tenderness	29 (90.6)	22 (78.6)	51 (85)
Vomiting	25 (78.1)	22 (78.6)	47 (78.3)
Fever	7 (21.9)	5 (17.8)	11 (18.3)
White blood count ($10^9/l$)	12.9 \pm 5.4	12.1 \pm 5.0	12.3 \pm 5.2
Lactate dehydrogenase	429.2 \pm 209.7	245.7 \pm 130.2*	357.6 \pm 152.6
Aspartate transaminase	200.6 \pm 140.8	98.5 \pm 60.6*	151.5 \pm 105.2
Bilirubin (mmol)	46.2 \pm 33.6	31.8 \pm 26.2	38.9 \pm 28.1
Glucose (mmol)	9.1 \pm 2.8	7.9 \pm 2.2	8.1 \pm 2.4
Calcium (mmol)	2.1 \pm 1.2	2.1 \pm 1.2	2.1 \pm 1.2
Complications	5 (15.6)	5 (17.8)	10 (16.6)
Severe episodes	6 (18.7)	5 (17.8)	11 (18.3)
Mortality	1 (3.1)	2 (7.1)	3 (5)

p (biliary versus non-biliary) * - < 0.01 , ** - < 0.05

Table 3 - Clinical course of patients with severe pancreatitis.

Age	Sex	Etiology	Ranson's score	Complications	Hospital stay	Outcome
70	F	Idiopathic	4	Respiratory failure	12	Improved
39	F	Cholelithiasis	1	Abscess	6	Improved
65	F	Cholelithiasis	4	Cholangitis	6	Improved
48	F	SLE/Drugs	2	Pseudocyst	16	Improved
43	M	Idiopathic	1	Pseudocyst	11	Improved
40	F	Cholelithiasis	5	Respiratory and renal failure	43	Died
50	M	Carcinoma	3	Abscess	2	Unknown*
60	M	Cholelithiasis	1	Pseudocyst	18	Improved
13	F	Homocystinuria	3	Hemorrhagic ascites	21	Died
50	M	Idiopathic	3	Aspiration of gastric contents	1	Died

SLE - systemic lupus erythematosus, F - female, M - male
*Returned back to the treating hospital

showed abnormal pancreas in 55 cases including bulky pancreas, phlegmon, pseudocyst, abscess, and necrosis of the pancreas. In 6 episodes, the pancreas was normal on CT scan. According to the Ranson's criteria, pancreatitis was mild in 64 episodes and severe in 7. On the other hand, based on the combination of Ranson's scoring and the presence or absence of organ failure, the clinical course was consistent with mild pancreatitis in 60 (86%) episodes and severe in 10 (14%). One patient having severe episode according to Ranson's scoring did not have any complication whereas each of the remaining 6 cases had complications such as respiratory failure, cholangitis, respiratory and renal failure, hemorrhagic ascites, pancreatic abscess, and aspiration of the gastric contents. On the contrary, 4 cases positive for <3 Ranson's criteria (Table 3) developed complications in the form of pancreatic abscess in one and pseudocyst formation in 3 cases. Patients with severe pancreatitis had a longer hospital stay as compared to those with mild pancreatitis (14 ± 12 versus 8 ± 7 days). Of the 10 patients with severe pancreatitis, 3 patients died while none died with a mild episode of acute pancreatitis. The overall mortality (N=3) in our series being 4.8% out of a total of 62 patients and 4.2% out of a total of 71 episodes. Out of the 3 patients who died, acute pancreatitis was due to gallstones in one patient, homocystinuria in another, and was idiopathic in the 3rd patient (Table 3). Two of these deaths were directly related to the severity of pancreatitis for example pancreatic abscess in one, and hemorrhagic ascites and shock in the 2nd patient. The death in the 3rd patient was not related to the pancreatitis process per se but as a result of acute aspiration of the gastric contents within 24 hours of admission.

Discussion. The most frequent cause of acute pancreatitis in our patients was gallstone disease and is in agreement with earlier reports from KSA.⁴⁻⁶ Cholelithiasis is highly prevalent in KSA in general^{10,11} and Jizan, KSA in particular.¹² Therefore, it had been anticipated that the frequency of biliary pancreatitis might be high. However, our findings in the present series did not reflect this. Similar dissociation between the 2 clinical disorders has been previously noted.¹² It has been suggested that this may be explained by an earlier observation that the Jizan population with cholelithiasis have relatively large stones,¹² and acute pancreatitis is reported to be more frequent in patients with small sized stones and microlithiasis.^{13,14} Biliary pancreatitis is known to occur in patients older than 50 years and is twice more common in females than in males.¹ This was also the observation in our patients.

Elevated levels of AST are known to occur in patients with biliary pancreatitis. A level of more than 3 x ULN has been shown to have a PPV of 95% for biliary pancreatitis.¹⁵ However, in the present study, the PPV of AST was only 71%. On the other hand, using LDH of >2 x ULN, the PPV was 92% suggesting that the application of LDH may be more useful in

discriminating biliary from non-biliary pancreatitis. However, prospective studies are needed in larger number of patients before making any conclusion. Ten (14%) of the episodes of acute pancreatitis in the present series were severe, a rate that is lower than reported in the literature.² The standard management of acute pancreatitis includes vigorous rehydration and measures for pain-relief. Severe episodes are usually managed in intensive care units. In regional hospitals, intensive-care unit beds are few and are often not available. Hence, the majority of our patients including the severe cases were managed in the wards. Despite this, the result of acute pancreatitis was good in our patients with mortality in 3 patients and only one patient requiring urgent ERCP and sphincterotomy as part of the management. Ranson's criteria have been considered useful in the assessment of severity of pancreatitis.⁷ In our series, these criteria identified mild pancreatitis in 60 of 61 episodes and only 6 out of 10 severe episodes.

The major drawback of the Ranson's criteria is that it usually predicts the severity at 48 hours of admission, thereby missing the critical initial period when the intensive management could be very useful in decreasing the mortality. This discrepancy and limitation in applying the Ranson's criteria have been reported earlier also.^{4,16} Other criteria/markers which have been used to assess the severity of pancreatitis are APACHE II scoring,¹⁷ Imrie's modification of Ranson's criteria,¹⁸ contrast enhanced computed tomography (CECT) scan assessment for pancreatic necrosis,^{19,20} and estimation of C-reactive protein especially at 48 hours of admission.²¹ Except for this, separate risk factors have been reported predicting severity of pancreatitis for example obesity, age, serum creatinine levels, development of pleural effusion, and thrombocytopenia.²² Many studies have been carried out comparing different modalities for severity assessment.^{23,24} However, an ideal scoring system is yet to be developed which could have an excellent specificity and sensitivity, applicable at the time of presentation, is easy to apply and are reproducible. Until the search for accurate and rapid predictors of severity succeeds it has been recommended to assess the severity of acute pancreatitis in each episode using a combination of evidence of organ failure, Ranson's scoring and CECT.²⁵

In conclusion, cholelithiasis is the most frequent cause of acute pancreatitis in our patients. Biliary pancreatitis occurred more frequently in elderly females as compared to patients with non-biliary pancreatitis. Moreover, mean levels of LDH and AST were significantly higher in patients with biliary pancreatitis, and it presents in a mild form with low morbidity and mortality.

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Abstract

Patients admitted with diagnosis of acute pancreatitis (AP) from January 1984 to December 1987 to Al-Ain Hospital in United Arab Emirates (UAE) were reviewed. Seventy-six episodes in 61 patients were studied. The criteria for diagnosis were a serum amylase level of more than 1000/1 with a consistent clinical presentation. The mean annual incidence for first attacks of acute pancreatitis was estimated to be 1 per 10,000 of the population. The commonest etiology was biliary tract disease (54.1% of all cases). Alcohol-related pancreatitis caused only 6.6% of the episodes: other causes in our series were: drugs 6.6%; surgery 4.9%; duodenal ulcers 4.9%, hyperlipidemia 4.9%, endoscopic retrograde cholangio pancreaticography (ERCP) 3.3%, mumps 3.3% and blunt trauma 1.6%. A cause could not be found in 9.8%. Only 2 deaths were recorded (mortality 3.3%). Pseudocysts developed in 8 patients (13.0%), a pancreatic abscess occurred in one (1.6%) and pancreatic ascites in 3 patients (4.9%).