ORIGINAL ARTICLE

Characteristics of Acute Pancreatitis in Universiti Kebangsaan Malaysia

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Summary

We analyzed the characteristics of patients presenting with acute pancreatitis to our unit. A total of 71 patients were admitted to the Surgical Department at University Kebangsaan Malaysia (UKM) over a period of seven years, between January 1990 to December 1996 with acute pancreatitis. There was a fourfold increase in incidence of acute pancreatitis in our hospital from January 1990 to December 1996. The commonest identifiable aetiology was gallstones followed by alcohol. There were two deaths. We conclude that acute pancreatitis is increasingly being diagnosed in our local population. This may be due to either greater awareness or changes in lifestyle of the population.

Key Words: Acute Pancreatitis

Introduction

Acute pancreatitis is an acute inflammatory process of the pancreatic gland with variable involvement of surrounding tissues or remote organ systems. The spectrum of this disease can range from mild and self limiting to severe and fatal. The incidence of acute pancreatitis in the Western population ranges from 242 per million to 750 per million[1,2]. Men are more commonly affected than women[1,3], with an increasing incidence in the young and middle age group[1]. To date, there is little data to show the pattern of acute pancreatitis in Malaysia. The incidence, aetiology, severity and outcome of acute pancreatitis in Malaysia remains obscure. We were interested to examine the patient characteristics, the aetiology, the severity of pancreatitis as predicted by the simplified Glasgow score and outcome.

Materials and Methods

A retrospective analysis of all adult patients with acute pancreatitis under the care of the Department of Surgery, UKM from January 1990 to December 1996 was undertaken. The aim was to examine the patient characteristics, the aetiology, the severity of pancreatitis as predicted by the simplified Glasgow score and outcome. During the seven year period, from January 1990 to December 1996, patients with acute pancreatitis admitted to the University Department of Surgery were identified from the discharge registry. Diagnosis was based on clinical features of upper abdominal pain and tenderness with significantly raised serum and/or urine amylase levels. A significant serum amylase level was considered to be four times greater than the laboratory normal (>1000IU/L) and urine amylase to be four times greater than the laboratory normal (1200IU/L). Patients with obvious clinical and radiological features of pancreatic inflammation with normal or mildly raised serum and/or urine amylase levels were also included into this study.

Gallstone related disease was based on the identification of gall stones by ultrasonography or CT scan. Alcohol related disease was assumed if there was a clear history

of regular, frequent (at least biweekly), consumption of alcohol and those who develop symptoms after taking alcohol with no other identifiable factors. Post ERCP pancreatitis was diagnosed if the disease occurred within a week of the procedure. Pancreatitis was classified as idiopathic when an aetiologic factor could not be identified. The severity of the pancreatitis was scored within 48 hours of admission using the Simplified Glasgow score of severity[4].

Severe pancreatitis was predicted when the score was 3 or more and mild when the score was 2 or less. Those patients who could not be classified due to insufficient data were placed in the inconclusive group. All patients were treated by keeping them nil by mouth, nasogastric aspiration, fluid and electrolyte resuscitation. Analgesia was given on a regular basis in most patients. Endoscopic sphincterotomy was performed in patients who had common bile duct calculi or a dilated common bile duct. A few patients required surgery and this was documented with the indication. All complications were documented and managed accordingly.

Results

There were a total of 71 patients admitted for acute pancreatitis between January 1990 to December 1996. The highest number of admissions were in 1996 (17 patients), while the least (4 patients) were admitted in 1990 and 1992 (Fig. 1). The incidence of acute pancreatitis was higher in males, 43 males (60.6%) compared to 28 females (39.4%). The incidence of acute pancreatitis among the ethnic groups was, Malays n=32, (45.1%), Indians, n=24, (33.8%), Chinese n=11, (15.5%) and others including Indonesians, Pakistanis and other foreigners, n=4, (5.6%). When compared to

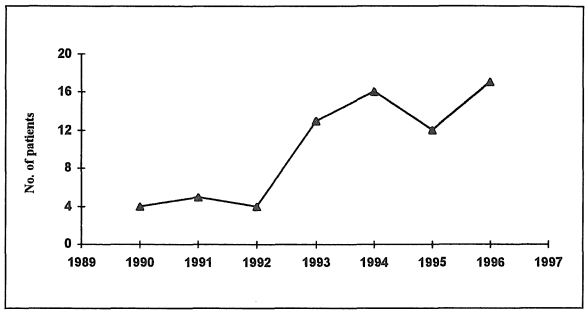

Fig. 1: Number of patients diagnosed with acute pancreatitis in UKM, 1990-1996.

the local population ratio, there is a high incidence of acute pancreatitis among the Indians (Table I). The commonest age group in acute pancreatitis was between 35 years to 44 years old, (Fig. 2).

Fifty-three patients (74.6%) with acute pancreatitis, had a serum amylase level of more than 1000IU/L. Ten patients (14.1%) had serum amylase levels between 400 to 1000IU/l and 8 patients (11.3%) had less than 400IU/L. Urinary amylase levels were elevated in most patients with acute pancreatitis. Fifty-one patients (71.8%) had urinary amylase levels greater than 1200IU/l, whereas only 5 patients (7%) had levels less than 1200IU/l. Fifteen patients (21.1%) did not have a urine amylase done. Of these 15 patients, 12 patients had a significant rise in serum amylase levels.

Patients were classified according to the Simplified Glasgow criteria[4]. Forty-two patients (59.2%) were classified as mild acute pancreatitis, 21 patients (29.6%) as severe acute pancreatitis and, 8 patients (11.2%) could not be classified due to insufficient data. The aetiology of 22 patients (31.0%) was not be identified

Table I
Incidence of acute pancreatitis in ratio with population

	% Pancreatitis	% Local Population	Ratio	Relative Risk
Malays	45.1	55.3	0.82	Moderate
Chinese	15.5	33.9	0.46	Low
Indians	33.8	10.2	3.31	High

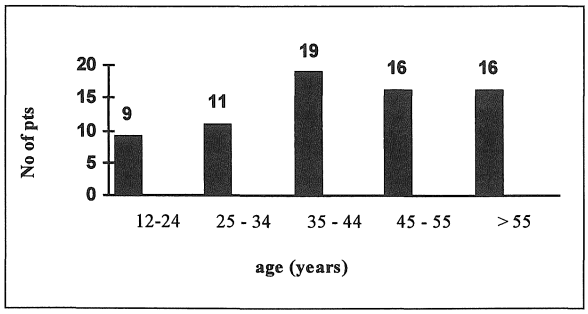

Fig. 2: Acute pancreatitis in different age groups.

and were grouped as idiopathic. Attempts to identify the etiology was not complete in the earlier years and these patients were classified as idiopathic. The most common identifiable cause of acute pancreatitis was biliary calculi, accounting for 32 patients (45.1%). Next was alcohol, accounting for 14 patients (19.7%). Other less common causes of acute pancreatitis included trauma in 2 patients (2.8%), ductal stricture, post ERCP for duodenal diverticulum in one patient (1.4%). There were no deaths in patients presenting with mild pancreatitis (n=42). However, 3 patients with mild pancreatitis (7.1%) had a complicated course. Of the 21 patients with severe acute pancreatitis, only 5 patients (23.8%) had an uneventful outcome. Fourteen patients (66.7%) had complications and survived. Two patients (9.5%) with severe pancreatitis died (Fig. 3). All patients (n=8) in the inconclusive group had an uneventful outcome. Table II compares number of patients with a significantly raised serum amylase in the gallstone pancreatitis group and the alcoholic pancreatitis group.

Nineteen patients with acute pancreatitis developed complications, which included 9 patients with hyperglycemia, 6 patients with respiratory failure, 5 patients with hypocalcemia and pseudocyst respectively, 3 patients had renal impairment, 2 patients had pancreatic necrosis and one patient had acute fluid collection, pancreatic abscess and empyema of the gall bladder respectively. Majority of the complications occurred in patients with severe acute pancreatitis. Of the nineteen patients who developed complications, 16 patients had severe pancreatitis. Only 3 patients with mild acute pancreatitis had complications of which none were serious (hyperglycemia, mild hypoxia and hypocalcemia). Overall there were 2 deaths (2.8%), one in 1995 and the other in 1996. Both resulted following severe acute pancreatitis. Causes of death were respiratory failure (n=1) and hemorrhagic pancreatitis (n=1). There were no endoscopic sphinterotomies done in patients from 1990 to 1992. Between January 1993 and December 1996, 9 endoscopic sphinterotomies (14.5%) were performed, following resolution of the acute episode. Eight sphinterotomies were done for gallstone pancreatitis and one for duodenal diverticulum in a patient with gallstone pancreatitis. There were two post-ERCP complications (22.2%) in this group, empyema of the gallbladder (n=1) and an infected pseudocyst (n=1), both requiring surgical intervention. All these 9 patients were well and asymptomatic on follow up.

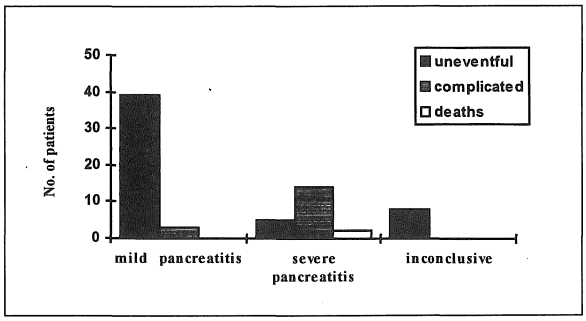

Fig. 3: Outcome of acute pancreatitis.

Table II
Serum amylase in types of acute pancreatitis

Serum amylase	Gallstone pancreatitis	Alcoholic pancreatitis	Idiopathic pancreatitis
>1000 IU/L	28(87.5%)	6(42.9%)	17(77.3%)
<1000 IU/L	4(12.5%)	8(57.1%)	5(22.7%)

Two patients required surgical intervention (2.8%) for acute pancreatitis. One patient underwent necrosectomy for pancreatic necrosis. He was discharged well. The other patient had an open drainage for pancreatic abscess. This patient developed a pseudocyst 2 months later, requiring a pseudocystcystogastrostomy. Three of five patients who developed pancreatic pseudocysts required surgical intervention. The indications were non-resolving pseudocyst (n=2) and infected pseudocyst (n=1). The surgical procedures performed included pseudocystgastrostomy (n=2) and pseudocystojejunostomy (n=1). There was no morbidity or mortality in these 3 patients. Of the 33 patients with gallstone pancreatitis, only 16 patients (48.5%) had cholecystectomy as an elective procedure. The remainder either refused surgery or defaulted to follow up. Three patients were managed in intensive care unit (ICU), indications being respiratory failure (n=2) and post-necrosectomy (n=1).

Discussion

Acute pancreatitis became widely recognised over a century ago. The clinical and pathological description of the various forms of this condition were provided by Nicholas Sean, a Chicago surgeon in 1866, followed by Reginald Fitz, a Boston physician in 1898[2]. At the turn of this century, Opie discovered the association between cholelithiasis and acute pancreatitis[2]. In 1917, alcohol was established to be an important pathogenic factor[2]. Elman and colleagues demonstrated increase in serum amylase in the diagnosis of acute pancreatitis in 1929[6,7]. Acute pancreatitis is caused by intraglandular activation of digestive enzymes causing glandular destruction and release of enzymes into the general circulation, giving rise to systemic manifestations of organ failure. The activation of trypsin is believed to play a central role in initiating many of the pathogenic events of acute pancreatitis[2,8].

The incidence of acute pancreatitis has been increasing over the years. Our figures show that the incidence has increased from 4 patients in 1990 to 8 patients in the first 6 months of 1996, (Fig. 1). The incidence in our hospital in 1996 was 17 patients, which is a four fold increase compared to in 1990. Wilson and Imrie[1] reported an increase in 11-fold of acute pancreatitis in males to 750 patients/year and four fold increase in females to 484 patients per year during the period between 1961 to 1985. The increased incidence may be attributed to an increased awareness of this disease with routine serum amylase analysis for every patient presenting with abdominal pain. There have also been changes in lifestyle where greater quantities of alcohol are consumed today[1,2,9].

Serum amylase levels have been used as one of the most important diagnostic tool in the diagnosis of acute pancreatitis. This is due to the easy availability, simplicity, low cost and sensitivity[2,8-10]. The diagnostic values are variable with most centres using a values of four fold increase of the normal[4]. Serum amylase levels peak within a few hours after the acute attack and then decline rapidly. There have been reports of serum amylase levels of more than 1000IU/L in 99% of patients with acute pancreatitis[11]. One study[10] revealed, with a cut off value of serum amylase of 300IU/L, the sensitivity was 91 to 100% with a specificity of 71 to 98% whereas with a cut off value of 1000IU/L, the specificity was 100% and sensitivity reduced to only 61%. Other authors[3] reported a specificity of 95% when the serum amylase was twice the normal. In this study most patients had a serum amylase four times normal (53 patients, 74.6%). However there were 10 patients (14.1%) with an elevated serum amylase, but not quite four times normal, and 8 patients (11.3%) with normal amylase.

Serum amylase is not always raised in patients with acute pancreatitis[2,4,8]. There have been various reports with incidences up to 19% normoamylasemia[4]. This normal amylase levels may be due to a return to normal before hospitalization and the inability of the inflamed pancreas to produce amylase. Amylase levels do not correspond with the severity of the disease. Agarwal[10] reported 100% specificity with a strong positive urinary amylase. Our study revealed that 71.8% of patients had a significantly raised urine amylase.

Gallstones are the leading cause of acute pancreatitis in most centres (ranging between 35% - 85%) followed by alcohol (10% - 46%)[2,6,8,9,14-17]. A few reports have alcohol as the commonest cause of pancreatitis[18-21]. Idiopathic pancreatitis has a high incidence of, between 10% - 30%[2,8,1216,18,20,22,23]. In this study, idiopathic pancreatitis,

accounted for 31% (22 patients) most likely due to insufficient investigating. However, as in most of the Western population, gallstone pancreatitis is the leading identifiable cause, accounting for 45.1% (32 patients). Alcoholic pancreatitis occurred in 14 patients (19.7%). This again is comparable to the Western figures (10% to 46%)[2,8,12,18,19]. The amount and frequency of alcohol consumption is variable however; the incidence of alcohol consumption was greater in the lower income group. Carey[17] reported that 150 to 200g/day was necessary to induce pancreatitis. There was a very low incidence of post ERCP pancreatitis compared to other centres, which reported between 1 - 7%[8] and 11%[24]. Studies have shown that alcoholic pancreatitis to be less severe[25] with higher recurrence rates[8] and serum amylase levels tend to be more commonly within normal limits when compared to gallstone pancreatitis[4,8,10,11].

Computerised tomography (CT) is recommended by most centres as it is 85% to 94% sensitive[4,6,10,11,26,27]. It confirms diagnosis of pancreatitis, detects complications, helps to assess severity and can also be of therapeutic in the management of acute pancreatitis. Ultrasonography is less sensitive than CT[2,8,26], with reported sensitivity of 62% to 95%[2,10]. Computerised tomography may however, be normal in 14% to 28%[8].

Mortality in the West ranges from 3% to 30%[1-3,12,13,20,28-32]. Mortality depends on many factors such as aetiology, age, severity, presence of organ failure and presence of infection or complications. Mortality is much higher in elderly patients, pancreatitis of idiopathic and post ERCP aetiology, severe pancreatitis, necrosis and those who have early surgery[2,8,25,33,34]. There were two deaths in this series (2.8%). The complication rates in this series was comparable with those of the western countries at 26.8% (19 patients). Most of the complications, 16 patients (84.2%), occurred in patients with severe pancreatitis. Only three patients with mild pancreatitis developed complications. The incidence of pseudocyst varies between 1 - 50%[2,9,27], abscess 1 - 4%[2], acute fluid collection 40%[27] and necrosis 3 - 30%[35]. The complications in our series were comparable. Five (7.1%) of our patients developed pancreatic pseudocyst, 2.8% developed pancreatic necrosis and 1.4% had pancreatic abscess.

Previously, ERCP and sphincterotomy were not often used in the acute phase of pancreatitis as this was thought to exacerbate the attack, increasing morbidity and mortality. Post ERCP pancreatitis has a higher morbidity and mortality of up to 27%[1]. More recently, early ERCP and sphincterotomy in obstructive acute pancreatitis and pancreatitis of unknown etiology which does not resolve with conservative treatment is advocated as early ERCP and sphincterotomy has lower complications and mortality with a shorter hospital stay[2,8,18,30,33,36,37]. Sphincterotomy should be performed early in acute pancreatitis if obstruction is present or if the attack is not resolving in other types of pancreatitis.

Early surgery in acute pancreatitis has a higher morbidity and mortality[2,8,25,33,36]. But those developing complications like infected pancreatic necrosis, abscess and hemorrhagic pancreatitis need urgent surgery. Early surgery though carrying a high mortality, may be life saving and need to be done in selected patients at a proper time. Most pseudocysts resolve spontaneously[27,38-42]. Intervention is indicated only if the pseudocyst fails to resolve, is very large in size or become infected. Most patients with acute pancreatitis can be managed in the normal ward. However, patients with severe acute pancreatitis need ICU monitoring as they can deteriorate rapidly. In conclusion, the incidence of acute pancreatitis is increasing in our population. Indian males appear to be at a higher risk compared to the rest of the local population.

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