

Acute Pancreatitis at Jos University Teaching Hospital

Ugwu B. T., Obekpa P. O.,
Kidmas A. T.

Department of Surgery,
Jos University Teaching Hospital,
Jos, Nigeria.

Correspondence to:

Dr. B. T. Ugwu
Department of Surgery,
Jos University Teaching Hospital,
P. M. B. 2076, Jos, Nigeria.

The incidence of acute pancreatitis in this tropical setting is much lower (1.4 cases/13,775 hospital admissions/year) than the figures from the developed countries^{1,2}, granted that some cases may be lost to misdiagnoses. A total of fifteen cases of acute pancreatitis seen at Jos University Teaching Hospital over a period of ten years (April 1987 to March 1997) were reviewed retrospectively. There were thirteen males and two females (M:F = 6.5:1) with a mean age of 41 years (range 27 to 65 years). Alcohol accounted for 10(66.6%) cases; two (13.3%) cases occurred in HIV positive otherwise normal patients; one (6.7%) patient had gallstone; one (6.7%) patient was a diabetic and one (6.7%) case occurred post-splenectomy for splenic abscess. Majority, 13(86.7%) were diagnosed at laparotomy for acute abdomen. Peritoneal lavage and fresh frozen plasma (FFP) transfusion were found beneficial. There were three deaths (20% mortalities). We believe that with a high index of suspicion and judicious use of diagnostic armamentaria more cases of acute pancreatitis could be diagnosed in our environment which are presently being missed.

Keywords: *Acute pancreatitis, alcoholism, young patients, peritoneal lavage, frozen plasma transfusion.*

Acute pancreatitis is not a common disease in Sub-Saharan Africa but the incidence is on the increase¹. The diagnosis continues to be based on high index of suspicion in the face of consistent clinical features as well as laboratory results, ultrasonography and CT scan. The pattern of this disease has not been previously reported among the highlanders of this country. This study reports a retrospective survey of acute pancreatitis at the Jos University Teaching Hospital over a ten year period (April 1987 to March 1997) with a view to elucidating its pattern as well as highlight some recent concepts in management.

Patients and Methods

A total of fifteen patients with acute pancreatitis were seen at the Jos University Teaching Hospital between April, 1987 and March 1997. Their case notes were retrieved from the medical records and demographic and clinical data were analysed. Diag-

nosis of acute pancreatitis was acceptable if it was made at laparotomy or in the presence of consistent clinical features and elevated serum amylase above 1000 i.u/L and or ultrasonography.

Results

There were 13 males and two females (M:F 6.5:1) with median age of 40 years (range 27 to 65 years). It was their first attack of acute pancreatitis. It affected patients from all socio-economic groups. The mean annual incidence was 1.4 cases. 13 patients presented after 24 hours while only 2 presented within 12 hours of onset of symptoms.

Aetiology

The aetiological factors are as shown in table 1. 10 cases (66.6%), all males, were associated with excessive alcohol intake of more than 50g/day (>4L of "burukutu", a local maize brew or more than >3 Litres of beer daily) for months; two patients (13.3%)

were HIV positive but without the features of AIDS, one (6.7%) had gallstones another one (6.7%) was a diabetic and the last one (6.7%) was a 65-year old lady who had splenectomy for splenic abscess.

Table i Aetiology of Acute Pancreatitis in Jos

Aetiology	n	%
Alcoholism	10	66.6
HIV-related	2	13.3
Gallstone	1	6.7
Diabetes mellitus	1	6.7
Post-operative (splenectomy)	1	6.7
Total	15	100

Clinical Features and Diagnosis

Of the fifteen cases 13(86.7%) were diagnosed at laparotomy for acute abdomen and corroborated post-operatively by elevated serum amylase; the remaining two were diagnosed based on consistent clinical features, raised serum amylase level and serial ultrasound findings. The main clinical features included severe epigastric pain which radiated to the back (100%), hiccups (66.7%), prostration (60%), fever (53.3%), constipation (40.0%) and jaundice (13.3%). Abdominal tenderness, guarding and rebound tenderness associated with reduced bowel sound were noted in all of them. Gray-Turner’s and Cullen’s signs were noted in one (6.7%) case after the diagnosis was made at surgery.

Treatment

All the patients received adequate resuscitation. Adequate analgesia was achieved with regular low-dose pethidine. Morphia and non-steroidal anti-inflammatory drugs were avoided. 13 (86.7%) patients who had laparotomy had copious peritoneal lavage with normal saline intra-operatively and continued post-operatively for 3 to 5 days. Operative findings included fat necrosis, oedematous pancreas and duodenum, and the bowels were dilated in all the cases. Haemorrhagic pancreatitis was seen in five (33.3%) patients. In one patient the liver was cirrhotic. All the patients were transfused with fresh frozen plasma (FFP) commenced within 24 hours of diagnosis. The average number of FFP transfused was 3.0 units. In addition, 7 (46.7%) patients received between two and four units of whole blood transfusion. The patients were monitored by hourly review of their blood pressure, pulse rate, temperature, respiratory rates and urine output; serum glucose was estimated once or twice daily. The mean duration of hospital stay was thirteen days (range 3–21 days). Early complications noted included gastrointestinal

haemorrhage in one (6.7%) patient and renal failure 1 (6.7%) while the late complications included intestinal obstruction secondary to adhesions in two (13.3%) patients, and recurrent pancreatitis in one (6.7%) patient. There were three deaths (20% mortality); the first was due to hypovolaemic shock and multiple organ failure in the 65-year old lady who developed acute pancreatitis post splenectomy; one was a 50-year old diabetic who died of massive intraperitoneal haemorrhage and shock and the third a 45-year old HIV positive (otherwise healthy) man who died on the third post-operative day of irreversible renal failure.

Of the 12 (80%) who survived, 11 were lost to follow up after a mean period of 10 months; the remaining one (6.5%), an alcoholic, had 2 more admissions in the last three years for recurrent pancreatitis and was managed conservatively on each occasion after ruling out biliary calculi; his last two admissions were indeed exacerbation of an ongoing chronic pancreatitis.

Discussion

The Atlanta International Symposium of 1992 on acute pancreatitis^{2,3} successfully put to rest the problems previously encountered in terminology and classification of the disease. It dropped all the ambiguous, if not confusing, terminologies such as pancreatic phlegmon that used to beset standardization in the management of acute pancreatitis. It clearly defined acute pancreatitis as acute inflammation, usually with rapid onset of pain and tenderness, often accompanied by vomiting and systemic inflammatory responses. Regional tissues and remote organ systems are sometimes involved. Elevated pancreatic enzymes in blood or urine usually occur, but not invariably. The symposium further classified acute pancreatitis into mild acute pancreatitis and severe acute pancreatitis. In mild acute pancreatitis organ-system dysfunction is minimal and pathologically manifests itself as interstitial oedema with or without minimal fat necrosis. Recovery is uneventful where intensive resuscitation and detailed monitored multi disciplinary approach are applied. Majority of patients, up to 75% in the Western World^{2,3} fall into this group. Severe acute pancreatitis on the other hand, is characterised by life-threatening systemic complications and or pancreatic collections. Only about 25% of patients in the developed countries fall into this group^{2,3}. Pancreatic collections refer to localised acute pancreatic collections, acute pancreatic abscess, acute pancreatic necrosis and acute pancreatic pseudocyst – conditions which are indications for radiological/ endoscopic guided intervention or open surgery. Alcoholism and gallstone are the main aetiological factors in acute pancreatitis⁴. However, the part

played by each of these causes varies greatly in different parts of the world. Biliary tract disease was the leading cause in London (50%)^{2,5}, Montreal, Canada (75%)⁶, North and East Scotland (44.1%)⁷ alcoholism accounting for between 8 to 32%^{5,6}. In our series, however, alcohol accounted for 66.6% cases. Reports from the Western Countries show a slight female preponderance especially in Canada (M:F = 1:1.4)⁶ and Dundee M:F = 1:1.3⁵ as a result of higher incidence of gallstones in females. This contrasts with our experience in this tropical highland where we record a male preponderance with a M:F ratio of 6.5:1 and mostly alcohol pancreatitis. However, we may argue that with diligent stool sieving² to recover occult gallstones the incidence of gallstone pancreatitis may be upgraded in this environment. Two (13.3%) of our patients were initially thought to have severe acute haemorrhagic pancreatitis of unknown aetiology until their HIV test turned out to be positive both by ELISA screening and Western blot. Hyperamylasemia with elevation of other pancreatic enzymes like lipase, trypsin and elastase - 1 suggestive of subclinical pancreatitis has been shown to occur in 40-45% of patients with AIDS admitted to hospital^{9,10}. The two patients who were HIV positive, in the absence of any other obvious cause could have had acute viral pancreatitis by the same retro virus responsible for their HIV infection.

The diagnosis of Acute Pancreatitis in our series was made at laparotomy in most (86.7%) cases where the operations were performed for acute abdominal conditions often with little consideration for acute pancreatitis. We believe that with a high index of suspicion in the presence of consistent clinical features we would have improved on our pre-operative diagnosis. Serum amylase level alone, however, has its limitations especially with its sensitivity of 95-100% and a specificity of 70-98%^{8,10} as other surgical conditions may give a high amylase level. Other investigations such as serial ultrasonography, computed tomographic (CT) scan and gadolinium - enhanced magnetic resonance imaging (MRI) are needed for confirmation of diagnosis^{5,6,11} and for follow up.

In this tertiary centre the incidence of acute pancreatitis during the period of study was 1.4 cases per 13775 hospital admissions per year. Nine (60%) had mild acute pancreatitis while six (40%) had severe acute pancreatitis when rated on the modified Glasgow System³ which is comparable with the Ranson's scale⁴. Other prognostic systems include the APACHE II (acute physiology and chronic health enquiry) where a score of 8 points or more may be synonymous with multiple organ failure, and daily C-reactive protein measurement which are useful parameters of progress². C-reactive protein is an index of active inflammation. The modified eight

factor Glasgow (Imrie) prognostic criteria has a lot of attractions including its simplicity, fewer parameters and its use of the S.I. Units, otherwise it is similar to the Ranson's criteria.

Chart I
Modified Glasgow (Imrie) prognostic criteria^{2,3}.

Variable	Cut-off value
Age	>55 years
WBC	>15 x 10 ⁹ /litre
Plasma or serum urea (after intravenous fluids)	>16mmol/litre
Blood glucose (omit if already diabetic)	>10mmol/litre (180mg/dl)
Plasma or serum calcium	<2mmol/litre (8mg/dl)
Plasma or serum albumin	<32g/litre
Pa O ₂	<8kPa(60mmHg)
Plasma or serum lactate dehydrogenase	>600 IU/litre

This is an eight-factor prognostic scale calculated from data gathered within the first 48 hours of hospital admission. A score of more than two points predicts a severe attack.

Chart 2
Ranson's Ominous Prognostic Markers in Acute Pancreatitis⁴

The Ranson's eleven prognostic objective parameters identify early enough the risk of death and/or development of severe complications.

The parameter are grouped into (a) those estimated on admission to hospital and (b) those measured within the initial 48 hours of hospital admission.

- a. **On admission to hospital**
 1. Age greater than 55 years
 2. White cell count greater than 16,000 per mm³
 3. Fasting blood glucose greater than 11.2mmol/litre (i.e. 200mg%)
 4. Serum LDH greater than 350 i.u./litre
 5. SGOT greater than 250 S.F. units per cent.
- b. **Within the initial 48 hours of admission**
 6. A haematocrit decrease greater than 10 percentage points.
 7. Blood urea nitrogen increase greater than 0.8 mmol/litre (5mg%).
 8. Serum calcium less than 2mmol/litre (8mg per cent)
 9. Arterial oxygen tension less than 7.9kpa (60 mmHg)
 10. Base deficit greater than 4mEq/litre

11. Estimated fluid sequestration greater than 6 litres.

The mortality rate is 0.9 per cent in patients with less than 3 of these 11 parameters, with 3-4 parameters mortality is 18%, with 5-6 parameters mortality is 50% and with more than 6 parameters the mortality rate is 90 percent.

Indication for surgery in Acute Pancreatitis could be diagnostic or therapeutic¹¹. Diagnostic laparotomy is done when other life-threatening extra-pancreatic causes of acute abdomen can not be ruled out by non-operative measures^{11,12} as was the case in 86.7% of patients in this report. Therapeutic indications include acute pancreatic collection, acute pancreatic abscess, acute pancreatic necrosis and acute pancreatic pseudocyst. Laparotomy and simple pancreatic drainage procedure first popularised by Waterman in 1968 and later by Lawson in 1979 who combined sump drainage of the pancreas with cholecystostomy, gastrostomy and feeding jejunostomy for severe acute pancreatitis achieved a survival of 74%¹¹. This procedure is however not very popular now¹¹. Early pancreatic resection and debridement as first reported by Watts¹³ in 1963 is practised by some surgeons with the belief that removal of devitalised or necrotic tissue is beneficial^{11,12}. However, 40-92% of patients who survived such treatment developed diabetes mellitus later¹⁴. Biliary procedures are indicated in gallstone pancreatitis; these include endoscopic retrograde cholangiopancreatography (ERCP)/sphincterotomy in the early stage and complemented subsequently with cholecystectomy and common bile duct explorations^{15,16} where indicated. Peritoneal lavage during laparotomy and continued post operatively or via catheters placed without laparotomy has been found to improve morbidity in terms of cardiovascular and respiratory functions^{11,17,18} and ultimately decreases mortality (mortality of 15.6% compared to 31.6% in the non-lavage group)¹⁹. Fresh frozen plasma provides natural source of antiprotease and limits the fall of α_2 -macroglobulin in acute pancreatitis^{3,8}. Despite intense multi disciplinary approach to treatment, the final outcome of a patient with acute pancreatitis is usually unpredictable especially in the first 24-48 hours. In our environment with scarce resources and patients impecuniary, fluids needed for adequate resuscitation may be erratically supplied. So often a patient with a mild physical findings on admission may end up with turbulent and life threatening complications in the next few days and may even develop multiple organ failure. For this reason the severity or otherwise is best determined when acute pancreatitis has ran its full course². Therefore diligent monitoring with a view to adopting the concept of dynamic working diagnosis and treatment should be the goal. We found it very useful adopting this

monitoring system: the pulse rate, blood pressure, respiratory rate and urine volume should be monitored hourly; pain, tenderness and temperature are better re-evaluated 4 hourly, blood glucose estimation should be monitored daily.

Mortality could be due to a single or multi-organ-system failure. Single organ failure could be either cardiovascular when the systolic pressure is less than 90mmHg; respiratory (PO_2 less than 8kPa or 60mmHg); renal when serum creatinine is greater than 177 mmol/L or 2mg% after rehydration; coagulation failure when platelet are less than 100,000/mm³ or fibrinogen level of less than 1g/l or fibrinogen degrading products level of more than 80mg/ml; metabolic with hypocalcaemia of less than 1.87mmol/litre (7.5mg%) or gastrointestinal with a haemorrhage of more than 500ml in 24 hours. Multiple organ-system dysfunction² occurs when there is a combination of the systems above, or when there is three or more positive Ranson or Glasgow prognostic factors or an APACHE-II score^{20,21,22} of 8 or more points.

We believe studied with a higher index of suspicion. The roles of peritoneal lavage and Fresh frozen plasma transfusion-procedures which could easily be performed in any developing country - appear beneficial tools in the management of acute pancreatitis in this study.

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