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Research Article

Clinico-pathological study of acute pancreatitis: a prospective study of 30 cases

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ABSTRACT

Background: The incidence of acute pancreatitis (AP) has increased during the past 20 years. Aim of this study was to review various clinical parameters like etiological factors, age, sex, clinical signs & symptoms and various biochemical criteria like serum amylase, lipase, blood sugar, and serum calcium in assessment of acute pancreatitis.
Methods: We conducted prospective study on 30 patients admitted in our Hospital, who were diagnosed clinically as acute pancreatitis associated with raised serum amylase levels more than 160 somogyi units/100ml.
Results: The incidence was higher in males (66.66%) as compared to females. Most common etiological association was gallstone (50%) followed by alcohol (9%), idiopathic (16.66%). Most common clinical sign was abdominal tenderness (93.33%) followed by tachycardia (66.66%), tachypnoea (53.33%), rigidity (53.33%), jaundice (40%), epigastric lump (13.33%). Most common clinical symptom was abdominal pain (100%), nausea/vomiting (90%), abdominal distension (83.33%), fever (53.33%). Increase of serum lipase may be a better diagnostic tool because it found to be normal in some non-pancreatic conditions also. Blood sugar >200mg%, serum calcium < 8 mg% are important poor prognostic indicators and show increased severity of disease and mortality risk. In our study complications encountered were pleural effusion (10%), renal failure (6.66%), ARDS (3.33%), cardiac arrhythmias (3.33%).
Conclusions: Our study emphasizes that early diagnosis and assessment of severity of disease by various clinical signs, symptoms and biochemical criteria supported by radiological investigations is very important to minimize the complications of acute pancreatitis.

Keywords: Acute pancreatitis, Gall stone, Ranson's criteria

INTRODUCTION

Acute pancreatitis accounts for 3% cases of abdominal pain among patients admitted to hospital in U.K. Acute pancreatitis is an inflammatory process of pancreas with variable involvement of peripancreatic tissue and remote organ system. It is an acute condition usually associated with elevated pancreatic enzyme levels in blood or urine because of pancreatic inflammation.[1] The annual incidence of acute pancreatitis in Europe and U.S.A ranges from 20 to over 70 per 100,000 populations[2-4] and has increased over the last decade.[5] In 80% of the cases the disease is mild, with interstitial oedema and leads to recovery within days or weeks.[6,7] Severe forms, characterized by local or systemic complications ,may be on the other hand be very demanding and are associated with severe morbidity and even death, in up to 15-20% cases.[7,8]

METHODS

The present study was performed on 30 patients of acute pancreatitis in Department of Surgery, NIMS Medical College, Jaipur, a tertiary care teaching hospital in Northern India. This prospective study was carried out on patients admitted in our hospital from December 2011 – November 2013.

***Inclusion* criteria**

Acute abdominal pain diagnosed clinically as acute pancreatitis and confirmed by raised serum amylase values > 160 somogyi units/100 ml.

Exclusion criteria

Patients with severe metabolic disorders, intestinal perforation, intestinal obstruction, trauma, mesenteric vascular ischemia.

All patients were admitted in surgical unit and a careful history taken and physical examination was performed. The following laboratory data were obtained on each patient included in this study:

1. Complete blood count
2. Blood sugar
3. RFT
4. LFT
5. Serum amylase
6. Serum lipase
7. Serum electrolytes
8. Serum calcium
9. Radiological investigations (USG abdomen, CECT abdomen)

RESULTS

In this prospective study of acute pancreatitis, the incidence was higher in males (66.66%) as compared to females. Male preponderance was seen in younger patients and female preponderance is seen as age is increased. (Table 1)

In our study most prevalent cause was gallstone (50%) followed by alcohol (9%), idiopathic (16.66%). (Table 2) Most common clinical sign was abdominal tenderness (93.33%) followed by tachycardia (66.66%), tachypnoea (53.33%), rigidity (53.33%), jaundice (40%), epigastric lump (13.33%). (Table 3)

Most common clinical symptom was abdominal pain (100%), nausea/vomiting (90%), abdominal distention (83.33%), fever (53.33%). (Table 3)

As evident in our study that serum amylase level returns to normal by one week in most patients. Serum lipase is more specific as compared to amylase; its increased levels persist longer than amylase. (Table 4)

Blood sugar more than 200mg%, Serum calcium less than 8mg% is important poor prognostic indicators and show increased severity of disease and increase mortality risk. (Table 5)

In our study complications encountered were pleural effusion (10%), renal failure (6.66%), ARDS (3.33%), Cardiac arrhythmias (3.33%).

Table 1: Distribution of cases according to age and sex.

Age	Male	Female	Total
10-20	3	0	3
21-30	4	0	4
31-40	2	1	3
41-50	6	1	7
51-60	4	3	7
61-70	1	4	5
71-80	0	1	1
Total	20	10	30

Table 2: Etiological distribution of cases.

Etiology	Male	Female	Total
Alcohol	9	0	9
Gall stones	7	8	15
Both alcohol & gall stone	1	0	1
Idiopathic	3	2	5
Total	20	10	30

DISCUSSION

As per Table 1, According to age distribution in study conducted upon 30 patients the age range was 10-80 years with mean age 41-50 years. According to Decor Stimac et al. in 2013 mean age was 60±16 years.[9]

In our study male preponderance was present in younger patients and Female preponderance was increased as age is increased. In 21-30 years age group out of total 4, all patients were male versus nil in female age group. Whereas in 61-70 years age group, out of total 5, 4 female versus 1 male patient were present. This study correlates with a study in terms of that acute pancreatitis is seen with a peak in young men and older women.[1] In 1998 Pezzili et al. also stated that age of male was significantly lower than that of females in acute pancreatitis.[10]

As evident from Table 2, the most prevalent cause of acute pancreatitis was gall stones. Gall stones were more prevalent in females with a total of 8 cases out of 15 cases. Second most common cause was alcohol consumption and this is seen only in males. Idiopathic group comprised of a total of 5 cases. In 2002, Birgisson H et al. reported that most important etiological factors for acute pancreatitis are either biliary tract disease or

alcohol, which account for 75-80% of all cases of acute pancreatitis.[11] In 2009, Lowenfels AB et al. reported that the most common cause of acute pancreatitis is gall stone (40-70%) and alcohol (25-30%).[12]

Table 3: Distribution of cases according to clinical signs and symptoms.

Signs	Male	Female	Total	Symptoms	Male	Female	Total
Tenderness	20	8	28	Pain Abd.	20	10	30
Tachycardia	15	5	20	Nausea vomiting	19	8	27
Tachypnoea	12	4	16	Abdominal distention	19	6	25
Rigidity	10	6	16	Fever	10	6	16
Jaundice	8	4	12				
Lump	3	1	4				

Table 4: Serum amylase and lipase levels.

Amylase levels (IU)	At admission	On 7th day	Lipase levels (IU)	At admission	On 7th day
<150	10	19	<100	9	19
150-300	10	10	100-200	14	9
>300	10	1	>200	7	1

Table 5: Blood sugar and serum calcium.

Blood sugar (mg%)	At admission	On 7th day	Serum calcium(mg/dl)	At admission	On 7th day
<100	5	7	<7	7	5
100-200	13	13	7-8	8	4
>200	12	10	8-9	9	10
			>9	6	11

As shown in Table 3, the presenting clinical signs are multiple and constituted Abdominal tenderness was the most common sign 28 cases (93.33%), tachycardia 20 cases (66.66%), tachypnoea 16 cases (53.33%), rigidity 16 cases (53.33%), jaundice 12 cases (40%), epigastric lump 4 cases (13.33%).

As in Table 3, the presenting symptoms were multiple and constituted mostly of abdominal pain 30 cases (100%), nausea/vomiting 27 cases (90%), abdominal distention 25 cases (83.33%), fever 16 cases (53.33%). In 2007, Forsmark CE et al. reported that patients of acute pancreatitis present with characteristic severe pain in epigastrium which is often accompanied by nausea and vomiting.[13]According to Webster PD et al. nausea and vomiting are present in 75-90% of patients.[14]

Abilio Munoz et al. in 2000 stated that serum amylase levels start increasing from 2-12hours after the onset of symptom and peaks at 12-72 hours. It usually returns to normal within one week.[15] In our study as shown in Table 4, on 7th Day, in 19 patients amylase levels were less than 150 units and only one patient on 7th day had levels above 300 units. Typically the diagnosis is made on the basis of clinical presentation and serum amylase. A serum amylase level 3-4 times above normal is indicative of disease. A rise of serum amylase more than 3 times the expected is however not always seen in acute pancreatitis e.g. duration more than 48 hrs., hypertriglycridemia or depleted acinar cell mass.[15]

Abilio Munoz et al. in 2000 stated that lipase levels increase within 4-8hrs of the onset of clinical symptoms and peak at about 24 hrs. Levels decrease within 8-14 days.[16]

Increased levels of serum lipase may be preferable to diagnosis because it remains normal in some non-pancreatic conditions that increase serum amylase; including macroamylasemia. The level of increased lipase remain longer than that of serum amylase.[17]

As per Ranson's criteria, blood sugar more than 200 mg%, serum calcium less than 8 mg% are considered to be poor prognostic indicators and show severity of disease. The severity of acute pancreatitis was introduced by Ranson & colleagues in 1974.[18] The Ranson's score has low positive predictive value (50%) and a high negative predictive value (90%), therefore it is mainly

used to rule out severe pancreatitis or predict risk of mortality.[19]

CONCLUSION

In this prospective study of acute pancreatitis, the incidence was higher in males as compared to females. Male preponderance was seen in younger patients and female preponderance is seen as age is increased. The most prevalent cause was gall stone for acute pancreatitis. Most common clinical sign was abdominal tenderness. Most common clinical symptom was abdominal pain.

Serum amylase is very important diagnostic tool in association with clinical features for diagnosis of acute pancreatitis. As evident in our study that serum amylase level returns to normal by one week in most patients. Serum lipase is more specific as compared to amylase; its increased levels persist longer than amylase. Blood sugar more than 200 mg%, serum calcium less than 8 mg% is important poor prognostic indicators and show increased severity of disease and increase mortality risk.

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