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Prevalence, Clinical and Etiological Profile of Acute Pancreatitis in India: A Single Center Study

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Abstract
Introduction: *Acute pancreatitis is an inflammatory condition of pancreas caused by auto digestion of the gland by its digestive enzymes leading to destruction of the gland. The aim of the study is to assess different epidemiological factors associated with acute pancreatitis.*
Materials and Methods: *Our study a cross-sectional descriptive study. This study includes a total of 69 patients admitted in the medicine department with acute pancreatitis during the year. A detailed history was taken and radiological, biochemical studies was done to evaluate the patients.*
Observation: *there was male preponderance. Alcohol was the most common causative factor. Most of the patients were from age group 30-50.Plain radiograph of abdomen was not specific. USG whole abdomen and CECT abdomen was very sensitive. Serum amylase was elevated in all cases. Pain abdomen was most common symptom.*
Discussion: *discrepancy in sex distribution may be due to difference in hospital admission rate in male and female. Amylase creatinine ratio is very helpful. CECT abdomen has very little advantage over usg in diagnosing acute pancreatitis.*
Key words: *Acute pancreatitis, Risk factors, Diabetes Mellitus, Retrospective study, Cross-sectional study.*

Introduction

Acute pancreatitis is an inflammatory condition of pancreas caused by auto digestion of the gland by its digestive enzymes leading to functional impairment and morphological changes[1]. This condition may recur intermittently giving rise to chronic pancreatitis[2]. Severe acute pancreatitis may occur in about 25% of cases with acute pancreatitis[3].Incidence of acute pancreatitis is relatively higher in USA, Finland and Scotland[4]. It is relatively higher in black population, though the cause of this discrepancy is not known precisely[4]. There are several factors which predisposes a person foracute pancreatitis, such as alcoholism, gall stone, exposer to certain drugs repeatedly, abdominal trauma, cystic fibrosis, sepsis etc. Since little known about different etiological factors associated with acute pancreatitis, the aim of this study is to assess the same .

Material and Methods

The present study includes patients with various acute pancreatitis managed at the medicine department of Rajendra Institute of Medical Sciences during 2017-2018 with clinical, biochemical and radiological profile of these patients were studied.

1. Selection criteria for acute pancreatitis as follows: Patients presenting with upper abdominal pain either a single attack or recurrent attacks with elevation of serum amylase above 300 somogyi units (jognson, 1976), without any evidence of pancreatic insufficiency or irreversible morphological alteration.

2. Laboratory studies: The following pathological and biochemical tests were carried out in laboratory of rims, Ranchi.

1. Complete haemogram
2. Blood sugar
3. Blood urea
4. Serum bilirubin
5. Serum aminotransferases (AST, ALT)
6. Serum alkaline phosphatase.
7. Serum amylase
8. Urinary amylase
9. Amylase creatinine clearance using the formula:
10. (urinary amylase/serum amylase) * (serum creatinine/ urinary creatinine) * 100

3. Radiological studies:

1. Plain radiograph of abdomen:
   All the radiographs were examines by an expert gastrointestinal radiologist and the results were noted in the proforma.
2. Ultrasonography was done in all patients after proper bowl preparation using laxatives and deforming agents for two days prior to the examination. The examination was carried out after an overnight fasting and whenever necessary adequate fluid was given during the test to prepare a gastric window for visualization of the pancreas. The ultrasonography was done with a 3.5 MHz transducer of Siemens imager. The screening and reporting was done by a gastrointestinal radiologist and the results were noted in the proforma.
3. Computer tomography was done in the radiology department and carried out in almost all cases of acute pancreatitis.

Observations

There was male preponderance, overall sex ratio male: female was 2.8:1 (Table 1), the number of males was about three times the number of females in patients with acute pancreatitis. The pick incidence was in the 4th and 5thdecade (Table 2).

Table 1: Age and Sex distribution of patients with acute pancreatitis

Age		Sex	
Mean Age	Range	Male	Female
45.4	26-57	51	18

Table 2: Sex distribution in different age groups

Age(years)	Male	Female	Total number	Total percentage
10-30	6	3	9	13.04
31-50	32	7	39	56.52
Above 50	15	6	21	30.4

Alcohol was the commonest causative factor in patients with acute pancreatitis (Table 3). The mean duration of alcohol consumption was 11.25 years and the average amount consumed was 100 gm/day. 93% of the patients with history of alcoholism were male. Gall stone disease was observed in just under one third of the patients and the majority was female. One patient developed acute pancreatitis following ERCP. No cause was ascertained in remain one fourth of the patients and they were labeled as idiopathic acute pancreatitis.

Table-3: Distribution of Etiologic groups in acute pancreatitis patients

Working diagnosis	Total(69)
Alcohol	22(31.88)
Idiopathic	14(20.3)
Non-alcohol	
Obstructive	11(15.9)
Gall stones	7(10.1)
Intraductal papillary neoplasm	3(4.3)
Sphincter of Oddi dysfunction	1(1.4)
Obesity	8(11.5)
Hypertriglyceridemia	2(2.9)
Hereditary	2(2.9)
Miscellaneous	
Trauma	2(2.9)
Hypercalcemia	1(1.4)
Radiation	1(1.4)
Auto-immune condition	2(2.9)
Cystic fibrosis	1(1.4)
Miscellaneous	3(4.3)

Clinical features of patients with acute pancreatitis (Table 4): the commonest presenting symptom was pain abdomen in all the patients. Primary site was in the epigastrium in two third of the patients and located in the right hypochondrium in 18.25% cases or was diffuse in remaining patients, radiation of pain to the back was observed in two third of patients and relieve of pain in bending forward was noted in one half of the patients. Vomiting accompanied pain abdomen in 18% of patients. Jaundice was observed in over one third of the patients in all except one was associated with biliary disease. Other symptoms encountered were fever (36%) and gastrointestinal bleeding (13%). None of the patients had features of shock, Cullen sign and parotid enlargement.

Table 4: Symptoms

PAIN ABDOMEN	69	100
VOMITING	55	79.7
JAUNDICE	28	40.5
G.I. BLEEDING	9	13.04
DIABETES	5	7.2

Laboratory studies: leukocytosis with total leucocyte count above 11000 /cmm was observed in 8 out of 15 cases (53.33%). Hyperglycemia with random blood sugar level above 200 was observed on in 8% of the cases. Serum bilirubin was elevated beyond 3 mg/dl was observed in 36% of the subjects. Significant elevation of amino transferases and alkaline phosphatase was observed in one third of cases, all of them had gall stone disease. The values of serum amylase raised between 373 to 4570somogyi units. Near two thirds of the patients had values above 500 and nearly all patients had values above 360. The amylase creatinine clearance ratio ranged between 5- 7.9. All the patients had values well above normal 3. Radiological studies: plain radiograph of abdomen was normal in three fourth cases. The rest had features suggestive of ileus. None of the patients exhibited characteristic feature like colon cutoff sign or sentinel loop. USG and CECT in acute pancreatitis: USG was diagnostic in 81 percent of patients with acute pancreatitis. In one patent pancreas could not be visualized due to excessive bowl gas giving a technical failure rate of 7 %. One patient in acute pancreatitis showed normal pancreas in ultrasound. In nearly three fourth of the subjects there was enlargement of the glands and echogenicity was reduced. Dilated common bile duct was observed in 38% of the cases and calculus in the same was noted in 29 % of the cases. Gall stones were found in the 38% of the cases. Ct was carried out in all cases. All showed increase size of the gland and reduced attenuation. One patient had dilated common bile duct and choledocholithiasis. This included one patient in whom pancreas was not visualized. ERCP was not carried out in any patient with acute pancreatitis; however acute pancreatitis was developed in one patient following ERCP which was done for suspected choledocholithiasis.

Table 5: Results of ultrasonography and computed tomography

Pancreas	Ultrasonography	Computed tomography
Size		
Normal	13(18)	
Increased	50(72)	69(100)
Decreased		
	Echogenicity (Ultrasound)	Attenuation(Computed Tomography)
Normal		
Increased		
Decreased	56(81)	69(100)
Heterogeneous		
Dilated CBD	26(38)	24(35)
Stone in CBD	29	24(35)
Notvisualized	1(.01)	

Discussion

The mean age of onset of acute pancreatitis was less than that observed in the western population, in our study it was 45.comparetive figures reported in studies from the west were 55 years in acute pancreatitis[5]. The male to female ratio was higher than that reported in western countries;males were affected three times higher than female. Read (1976) reported an equal sex incidence in acute pancreatitis[5]. This variation may be due to the pattern of hospital admission in our country where males far our number female.

Pain in upper abdomen was noted in all patients with acute pancreatitis. It was however of little help in identifying different pancreatic diseases with accuracy. The higher sensitivity of abdominal pain in acute pancreatitis was

comparable with observations of Oslen (1974) and Tandon (1987)[6].[7]. Serum amylase was elevated in all patients with acute pancreatitis and had a sensitivity of 100 percent. Earlier reports also made similar observations about sensitivity of serum amylase in acute pancreatitis. The amylase creatine clearance ratio was above 4.5 in all the cases with acute pancreatitis, this value was taken as minimum for the diagnosis of acute pancreatitis by Johnson (1976).the sensitivity and specificity of amylase creatinine clearance ratio in the diagnosis of acute pancreatitis was 100%. Warshaw (1975) had found that 93% of patients with acute pancreatitis had an amylase creatine ratio well above the normal[8]. Hypocalcaemia with serum calcium <8 mg/dl, amylase creatinine clearance ratio >20, haemoglobin<10 mg/dl and serum albumin < 2,5 mgm/dl all markers of high risk in acute pancreatitis were not observed in any of our patients[9].Plain radiograph didn't show classical signs of acute pancreatitis. Only ileus was observed in 16% of cases. As the above mentioned features are reported to occur early in the disease, this might have been missed in our study as most of the patients presented 48 hours after the onset of symptoms. Computed tomography was accurate in diagnosis of acute pancreatitis. It was advantageous over USG in one patient in whom USG could not visualize the pancreas. Van dyke(1985) reported a failure of 10 percent in CT scan as compared to 14 % in USG in diagnosing acute pancreatitis[10].

Alcohol, gall stone and idiopathic diseases were accounted for one third of the total no of patients with acute pancreatitis. There is a wide variation in the relative incidence of gall stone and alcohol pancreatitis in different reports. Alcohol induced acute pancreatitis was accounted for three fourth of the patients in studies by Ranson (1976) and Gliedman (1970). In the MRC trial gall stones accounted for a majority of the cases of acute pancreatitis. Bhansali reported an incidence of alcohol induced acute pancreatitis in 24% cases and gall stone induced disease in 17 % of his patients[11].

Conclusion

1) Males outnumbered females by nearly three times.
2) Peak incidence of acute pancreatitis occurred in 4th and 5th decade of life.
3) Epigastric pain was the dominant presenting symptom in almost all the cases.
4) Pain abdomen was not helpful in differentiating acute pancreatitis from other acute abdomen conditions.
5) Jaundice and significantly raised transaminases and alkaline phosphatase level were markers of biliary obstruction in acute pancreatitis.
6) Ultrasonography of whole abdomen was pivotal in diagnosis.
7) Computed tomography has no advantage over ultrasonography except in those cases where technically satisfactory examination was not possible with ultrasonography.
8) Alcohol consumption was the most important causative factor.

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