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Original Research Article

Clinical presentation of pancreatic disorders: a prospective cohort study of 25 cases

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ABSTRACT

Background: Pancreatic disorders are one of the commonest abdominal disorders presented to a surgeon. The study focuses on demographic profile, clinical presentation and outcome of pancreatic disorders.
Methods: All cases of pancreatic disorders admitted to surgical ward were included in this study. The clinical presentations, laboratory and radiographic investigations were recorded. Statistical analysis was done on SPSS software version 21.
Results: Majority of patients belong to age group of 41-50 years (48%) with male predominance (3.2:1). However, the mean age was 36.06 years. Most common presentation was acute pancreatitis (68%) but the findings were not significant ($p>0.05$). Alcohol and biliary colic remained the majority of cause for pancreatic disorders.
Conclusions: Pancreatic disorders are common in males in 5th decade of life. Alcohol and biliary calculi are the most common culprits for pancreatic disorders.

Keywords: Pancreatitis, Pancreas, Pseudocyst

INTRODUCTION

The pancreas is a soft, elongated, flattened gland, measuring 12-20 cm in length, occupying the epigastrium and left hypochondrium of the abdomen. Among the disorders of digestive system, the disorders of pancreas are one of the commonest disorders. The embryological development of heapto-pancreatico-biliary system is very complex. The anomalies caused during development that may sometimes have deleterious implications on physiology of the body. The acquired problems of pancreas require specialized training to tackle surgically.[1,2]

Acute pancreatitis (AP) is the acute inflammation of pancreas. The diagnosis of acute pancreatitis is made by fulfilling two of the following three criteria: acute onset of persistent, severe epigastric pain, lipase/amylase elevation >3 times the upper limit of normal and characteristic imaging features on contrast-enhanced computed tomography (CECT), Magnetic resonance imaging (MRI), or ultrasound.[3] Gall stones and idiopathic are the main reasons for AP, whereas alcohol abuse is the commonest cause of chronic pancreatitis.[4] Elevation of serum amylase and lipase are 90-95% specific for the diagnosis.[5] On CECT typical findings includes, focal or diffuse parenchymal enlargement, changes in density because of edema, indistinct pancreatic margins owing to inflammation, surrounding retroperitoneal fat stranding,

pancreatic necrosis, infected necrosis and abscess. The CT severity index (CTSI) is based on findings from a CT scan with intravenous contrast to assess the severity of acute pancreatitis. The maximum score that can be obtained is 10. Grading is done as follows: 1) 0-3: mild acute pancreatitis, 2) 4-6: moderate acute pancreatitis and 3) 7-10: severe acute pancreatitis.[6]

The management requires mainly supportive treatment. Severe cases that require respiratory and cardiovascular support are managed in intensive care units (ICU) with careful management of glucose, calcium, and fluid balance. Overall mortality rate of acute pancreatitis is 3.8%, mortality rate of SAP is as high as 16.3%.[7] The severity assessment is done through various scoring systems (e.g. Ranson's criteria and APACHE II). Complications of pancreatitis include, pancreatic fluid collections, liquefactive necrosis of pancreatic parenchyma, pseudoaneurysms of splenic vein and splenic vein thrombosis.

The common sequelae of pancreatitis, whether acute or chronic, are pancreatic pseudocysts and also the most common cystic lesion of the pancreas. Mostly they are asymptomatic, but presentation may include mass effect and secondary infection.[8] The small cysts (less than 4-6 cm) mostly resolve spontaneously. Fifty percent of all pseudocysts resolve spontaneously.[9,10]

Indications for drainage includes infection, large size (>4-6 cm), mass effect (Gastric outlet obstruction, hydronephrosis, biliary obstruction), growth on serial scanning, persistent symptoms.[11,12] Treatment options include open surgical debridement, or cystenterostomy with a Roux-en-Y jejunal loop, endoscopic drainage into the stomach (or duodenum) termed a cysto-gastrostomy, or percutaneous drainage.[10,11]

Periampullary tumors are those that arise within 2 cm of the ampulla of Vater in the duodenum. These are four main types of tumors: 1) Pancreatic head/uncinate process tumors: includes pancreatic ductal adenocarcinoma involving head and uncinate process of the pancreas, 2) Lower common bile duct tumors: includes types of cholangiocarcinoma involving the intra-pancreatic distal bile duct, 3) Ampullary tumors: those originating from the ampulla of Vater itself, and 4) Periampullary duodenal carcinoma.

The clinical outcomes of periampullary tumors depend upon the origin of these tumors although the systemic presentation may be similar in all types of tumors.[13,14] The study was conducted to see the various disorders of pancreas with which the patients reported to our centre and their outcomes.

METHODS

A prospective cohort study of 25 cases of pancreatic disorders admitted in surgical wards of our institute (Guru Nanak Dev Hospital, Amritsar) from Nov 2019 to Nov 2021 after taking their written informed consent. Approval of study was taken from Institutional Ethics Committee.

Inclusion criteria

Inclusion criteria were all cases of all age groups and sex with clinical signs and symptoms suggestive of pancreatic disorders and gave consent were included in the study.

Exclusion criteria

Exclusion criteria were patients who do not gave consent to be included in the study.

Various diseases pertaining to pancreas diagnosed by clinical, biochemical and radiological investigations and the parameters were noted on proforma. Various modalities used in management of pancreatic disorders whether conservative or surgical, were noted. Mortality rate was notified till date of discharge.

Statistical analysis

Statistical analysis was done on Microsoft excel worksheet and SPSS software version 21. Observations were calculated as means and frequencies of the outcomes. ANOVA test was used for univariate analysis and chi square test was used for multivariate analysis. P value <.05 is considered statistically significant.

RESULTS

Current study showed that acute pancreatitis was the most common disease (68%) followed by pseudocyst (20%). The finding is not statistically significant (p=.426) (Table 1).

Table 1: Diagnosis.

Diagnosis	Number of cases (%)
Acute pancreatitis	17 (68)
Pseudocyst pancreas	5 (20)
Periampullary carcinoma	2 (8)
Carcinoma pancreas	1 (4)
Total	25
P value	.426

Pancreatic disorders are more commonly seen in males (n=19). The age group commonly affected is 41-50 years (48%). Mean age was 36.06 years (Table 2).

The study revealed that pain and vomiting are the most common complaints of the patients followed by fever and dyspepsia. Palpable mass is seen in fewer cases (n=5) (Table 3).

Table 2: Demographic profile.

Age group (years)	Male (%)	Female (%)	Total (%)
11-20	1 (5.26)	0 (0)	1 (4)
21-30	1 (5.26)	1 (16.67)	2 (8)
31-40	5(26.32)	0 (0)	5 (20)
41-50	9 (47.37)	3 (50)	12 (48)
51-60	2 (10.53)	1 (16.67)	3 (12)
61-70	0 (0)	1 (16.67)	1 (4)
>70	1 (5.26)	0 (0)	1 (4)
Total	19	6	25
Mean age (years)	37.94	57.79	36.06±7.1
P value	0.76		

Table 3: Presenting symptoms.

Symptoms	Number of cases
Pain	22
Fever	14
Jaundice	9
Abdominal distension	5
Dyspepsia	13
Vomiting	22
Mass	5

In present study alcohol (72%) was main etiological factor followed by biliary calculi (20%) (Figure 1).

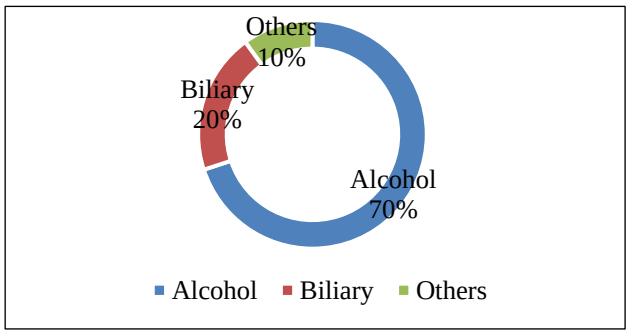

Figure 1: Etilogy of pancreatitis.

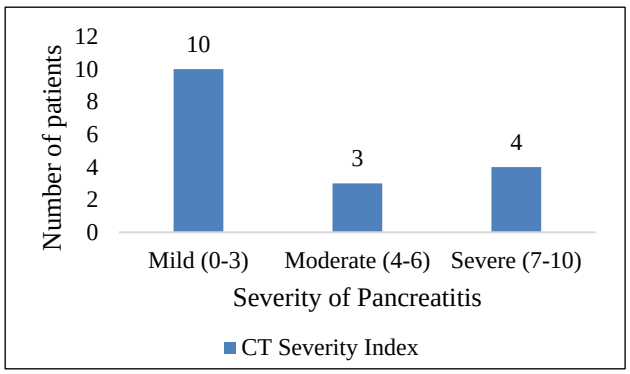

Figure 2: CT Severity index.

In present study, serum lipase (>3 times) was raised in 100% cases corroborating the higher specificity of serum lipase in pancreatitis WBC>11000 mm^3 was found in 16 out of 25 cases and 12 patient had AST >200 U/L.

CT severity index is used to assess the severity of acute pancreatitis in our present study. 10 patients had a CT severity index of 0-3 which is classified as mild acute pancreatitis (58.82%), while 3 patients had a CT severity index of 4-6 classified as moderate acute pancreatitis (%), while 4 patients had a CT severity index of 7-10 classified as severe acute pancreatitis (24%) (Figure 2). The mean value of CTSI was 3.46.

Out of the 25 patients of pancreatic disorder 17 patients were managed conservatively, while 5 patients underwent various surgical procedures (Figure 3). 4 patients underwent cystogastrostomy for pseudocyst pancreas as in all of these patients attack of pancreatitis occurred five to six weeks ago, the cyst size was >6cm, cyst wall was mature and all of them had persistent symptoms. 1 patient of pseudocyst pancreas underwent percutaneous drainage as the cyst was not found to be communicating with main pancreatic duct on MRCP. However, two cases of periampullary carcinoma and one case of carcinoma head of pancreas were metastatic. They were referred for chemotherapy after biliary stenting.

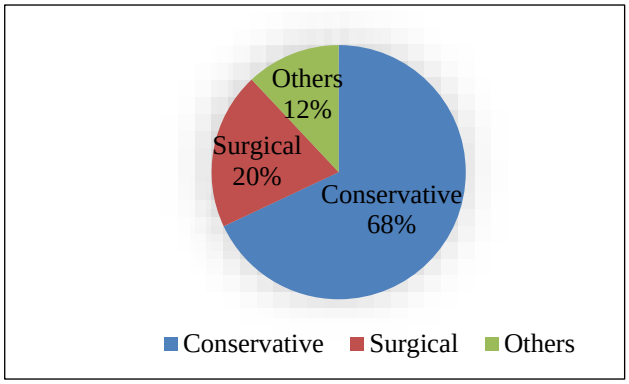

Figure 3: Management of pancreatic disorders.

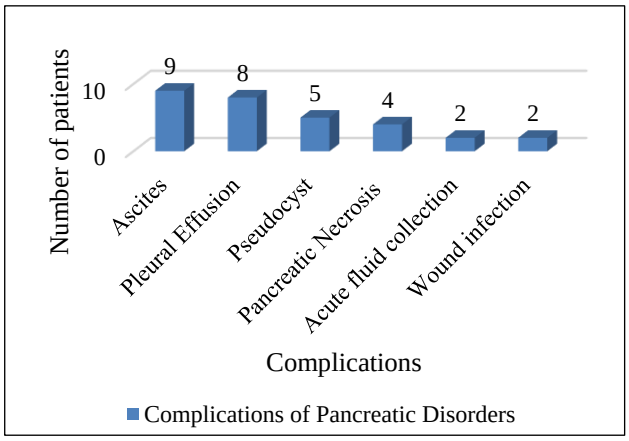

Figure 4: Complications of pancreatic disorders.

A total of 14 patients developed various complications, 2 patients (9.09%) had acute fluid collection and 5 patients had pseudocyst (22.72%). 9 patients had ascites (40.90%), 8 patients had pleural effusion (36.36%), 4 patients had necrosis (18.18%) and 2 patients had wound infection (9.09%) after being operated for pseudocyst pancreas (Figure 4).

All complications were managed conservatively except for 5 cases of pseudocyst pancreas, for which the patients underwent cystogastrostomy out of which 2 developed wound infection. 3 patients with pancreatic necrosis died due to MODS (Multi organ dysfunction syndrome) (12%).

DISCUSSION

This was a prospective study conducted over a period of around two years. Twenty-five patients diagnosed to have pancreatic disorders were evaluated extensively to note the demographic profile and the spectrum of clinical presentation.

Acute pancreatitis remained the most common diagnosis among the pancreatic disorders in this study (68%). After Fitz had described the case of acute pancreatitis a century ago, it has remained the most common presentation of pancreatic disorders.[5] Pseudocysts are the complications of acute and chronic pancreatitis. However, five patients presented to us after the formation of pseudocysts.

Among the age groups of pancreatic disorders, majority of the patients were in the 5th decade, with the mean age of presentation being 36.06 (Table 2). According to Nandu et al, the mean age of presentation of pancreatitis was 38.94 years.[15] The youngest patient was 20 years old and the eldest patient was 55 years old. As per Narender et al, the majority of patients were in 2nd to 4th decade of life (72%).[16]

Males (76%) were affected more commonly than females, which were comparable to a study by Nandu et al, in their clinical study, which reported that 92.25% patients were male.[15] The male to female ratio in present study was 3.2:1. The reason could be consumption of alcohol is more in among males in our society than females.

In present study alcoholism is the most common cause (72%) for pancreatic disorders which is in comparison with study conducted by Nandu et al, which reported that alcohol was the most common cause accounting for 78.17% cases of pancreatitis.[15] Mergener et al, also reported similar findings as 80% of cases in their study had alcohol and bile stones as etiology.[5]

In pancreatic disorders, abdominal pain and vomiting was present in all cases while 63.9% had fever, 59% had dyspepsia, 40.9% had jaundice, 22.72% patients had abdominal distension and mass abdomen. Laddha et al, in their clinical study of pseudocyst pancreas reported that abdominal pain was present in 98% of cases while abdominal tenderness was present in 62% of cases.[17] According to study by Kashid, abdominal pain was present in 92.93% of cases, vomiting in 60%, fever in 20% of cases, abdominal distension in 63.33% of cases, while jaundice was seen in 7.27% of cases.[18] The present study is in accordance with above mentioned studies.

Serum lipase levels were raised (>3 fold above normal limit) in all cases in present study. However, according to Narender et al, the magnitude of enzyme elevation had no correlation the with severity of acute pancreatitis.[16]

All cases were subjected to USG whole abdomen. The most common finding was a diffusely swollen pancreas with an increase in size. Out of 17 patients of acute pancreatitis, USG whole abdomen was negative in 4 patients. In the remaining 13 cases, the disease was detected by USG whole abdomen. The probable reason for limitation was that early edema and fat stranding are not picked up by USG. However, the sensitivity of USG in detecting acute pancreatitis is reported to be 90.77%.[19] Although not ideal but it is a cheap and easily available investigation for pancreatitis.[20] USG is also helpful to identify local complications such as pseudocyst pancreas. CECT whole abdomen in this study was a very sensitive, non-invasive tool in the diagnosis of pancreatitis and associated complications and is done in all cases. Contrast Enhanced Computed Tomography (CECT) is the imaging modality of choice. CECT has been shown to have a sensitivity of 87% and an overall detection rate of over 90% of pancreatic gland necrosis.[21] Panda et al, in his study showed that CECT had a diagnostic accuracy of 93.33%.[22] CT severity index was used to assess the severity of acute pancreatitis in our present study. 16 patients had a CT severity index of 0-3 which was classified as mild acute pancreatitis (60%), 4 patients with a CT severity index between 4-6 were classified as moderate acute pancreatitis (16%), while 6 patients with a CT severity index between 7-10 were classified as severe acute pancreatitis (24%). As per study of Kashid, mild acute pancreatitis was present in 52.73% of cases, while severe disease was present in 47.27% of cases. MRCP was done in all cases of pseudocyst pancreas to look for exact size, location and communication with main pancreatic duct.[18]

Amongst the 25 patients of pancreatic disorders, 17 patients were managed conservatively. Five patients underwent various surgical procedures. Out of 5 patients, 4 underwent cystogastrostomy for pseudocyst pancreas while one patient of pseudocyst pancreas underwent percutaneous drainage as cyst wall was not found to be communicating with major pancreatic duct on MRCP. This is comparable to the study done by Laddha et al, who reported that the most commonly done procedure for pseudocyst pancreas was cystogastrostomy.[17] Kulkarni et al, in their study, reported that 20 patients (64.51%) were managed conservatively. Complete resolution of the

pseudocyst was seen in 10 patients. Among other patients, 7 underwent open internal drainage, 2 underwent endoscopic internal drainage and pancreatic duct stenting, 1 patient underwent external drainage and one has to undergo distal pancreatic resection.[23] Three patients in present study had metastatic carcinoma and were referred for chemotherapy after palliative stenting. The 5-year survival of pancreatic cancer is less than 5%.[24]

A total of 14 patients developed various complications, 2 patients (9.09%) had acute fluid collections, 5 patients had developed pseudocysts (22.72%), 9 patients had ascites (40.90), 8 patients had pleural effusion (36.36%) and 4 patients had necrosis (18.18%), while 2 patients had wound infections (9.09%), who were operated for pseudocyst pancreas. The results of are comparable with a study done by Vengadakrishnan et al, which reported that 20 patients (18.2%) had MODS, 15 patients (13.6%) had pleural effusion, 9 patients (8.2%) had pseudocysts, 2 patients (1.8%) had hypotension, 2 patients (1.8%) had ARDS and 2 patients (1.8%) had diabetic ketoacidosis.[25]

Amongst 22 patients of pancreatic disorders, 3 patients (12%) of necrotizing pancreatitis died, the results of which were comparable to the study done by Vengadakrishnan et al, that reported a mortality rate of 18%.[25] However, mortality reported by Mergener et al, was 5-10%.[5]

However, there are certain limitations of this study. The sample size was small. Three patients of metastatic disease were lost to follow up.

CONCLUSION

As per the present study pancreatic disorders are seen in 5th decade of life commonly. Higher incidence is seen in male population. Among all pancreatic disorders pancreatitis is most common presentation. Alcohol and biliary stones are the commonest etiological agents causing pancreatitis. Mortality is higher in cases of where CTSI score is high.

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Ethical approval: The study was approved by the Institutional Ethics Committee of Government Medical College Amritsar, approval number BFUHS/2k/18p-TH/17593 dated 18/10/18

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