

## Original Research Article

# Demography and clinical profile of patients with chronic pancreatitis in a tertiary referral hospital in eastern India

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## ABSTRACT

**Background:** Chronic pancreatitis is defined as a pathological fibro-inflammatory syndrome of the pancreas in individuals with genetic, environmental and/or other risk factors who develop persistent pathological responses to parenchymal injury or stress. Potential causes can include toxic factors (such as alcohol or smoking), metabolic abnormalities, idiopathic mechanisms, genetics, autoimmune responses and obstructive mechanisms. We studied the epidemiological patterns in relation to age, sex and socioeconomic status, the etiological factors and pattern of clinical presentations. the different modes of management of chronic pancreatitis.

**Methods:** This prospective study on chronic pancreatitis was conducted in 55 patients admitted in Srirama Chandra Bhanja Medical College and Hospital (SCB M. C. H.), Cuttack, general surgery and surgical gastroenterology department.

**Results:** In the study sample 37 patients (68%) were male and 18 patients (32%) were female. the etiological distribution of the study sample is shown. 29 patients (53%) showed topical etiology, 21 patients (37%) showed alcoholic and 5 patients showed idiopathic. The sign and symptoms (clinical) of the study sample, 54 patients (98%) showed abdominal pain, 26 patients (47%) had diabetes (type 2), 1 patient showed steatorrhea, 2 patients (4%) had jaundice, 2 patients (4%) had pseudocyst and 1 patient (2%) had ascites. Surgical drainage procedure performed on the patients 23 patients (42%) underwent Puestow lateral (longitudinal) pancreatic jejunostomy, 18 patients (33%) underwent frey, 7 patients (13%) had lateral pancreatic jejunostomy, 1 patient (2%) had V section, 1 patient (2%) underwent whipple, 3 patients (5%) had cystogastrostomy and cystodudenostomy and 2 patients (3%) underwent cholecystojejunostomy.

**Conclusions:** The study revealed Puestow's procedure was the most commonly performed surgical drainage procedure with satisfactory results.

**Keywords:** Chronic pancreatitis, Topical chronic pancreatitis, Fibro-inflammatory syndrome, Puestow's procedure

## INTRODUCTION

Chronic pancreatitis is a relentlessly progressive fibro-inflammatory process, resulting in various amounts of destruction of endocrine and exocrine elements, which

eventually lead to pancreatic insufficiency. Abdominal pain which is excruciating and recurrent is dominant feature of chronic pancreatitis that initially brings most of the patients to physician's attention.<sup>1</sup> The pathogenesis of pancreatic pain is often multifactorial and explains why

not all patients respond to same mode of therapy. In contrast to the quantitatively huge interest stands. The fact that basic problem concerning the disease, the initial steps, the propagation, the mechanisms are still unsolved.

Newer classification systems, such as the TIGAR-O, categorize chronic pancreatitis based on the various known etiologic factors and mechanisms that are jointly considered risk modifiers (TIGAR-O) toxic, metabolic, idiopathic, genetic, autoimmune, recurrent severe, obstructive.<sup>1</sup>

Alcohol is still the most common cause of chronic pancreatitis in western industrialized countries, but only 5% to 10% of alcoholics develop clinically apparent chronic pancreatitis. Smoking also is independently associated with increased risk for chronic pancreatitis. Chronic pancreatitis induced by smoking is particularly associated with pancreatic calcification. Thirty percent of patients with chronic pancreatitis do not have known risk factors for chronic pancreatitis and are considered to have idiopathic pancreatitis. Tropical or nutritional pancreatitis is considered a form of idiopathic chronic pancreatitis.<sup>2</sup> It is the most common form of chronic pancreatitis in certain parts of the world, such as India, sub-Saharan Africa, and Brazil, and affects children and young adults.<sup>3</sup> Strong association between cystic fibrosis transmembrane conductance regular (CFTR) mutations and idiopathic chronic pancreatitis. One third of all patients with idiopathic chronic pancreatitis have CFTR mutations. Autoimmune chronic pancreatitis (AIP) is a rare but distinct form of chronic pancreatitis that is associated with autoimmune features. AIP is characterized by specific histopathologic and immunologic features. The morphologic hall marks are periductal infiltration by lymphocytes and plasma cells and granulocytic epithelial lesions with consequent destruction of the duct epithelium and venulitis.

With the above background we studied the epidemiological patterns in relation to age, sex and socioeconomic status, the etiological factors and pattern of clinical presentations. the different modes of management of chronic pancreatitis at SCB M. C. H., Cuttack and finally know the outcome and response of the surgical drainage procedure.

**METHODS**

This prospective study on chronic pancreatitis was conducted in 55 patients admitted in SCB M. C. H., Cuttack, general surgery and surgical gastroenterology department from May 2018 to January 2020.

Informed consent was obtained from all patient who were included in the study. Total no of patients with chronic pancreatitis admitted were 212. Out of them 55 patients under gone surgical drainage procedure and rest 157 patients were managed conservatively.

**Inclusion criteria**

All operated (surgical drainage) case of chronic pancreatitis with or without DM were included in the study.

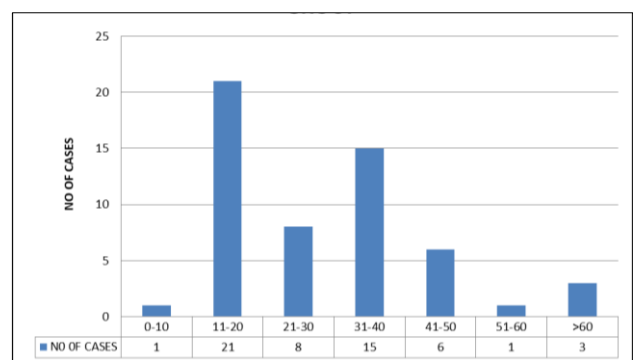
**Exclusion criteria**

Patients who were operated for chronic pancreatitis diagnosed to have carcinoma of pancreas were excluded.

Each patient in the study was subjected to detailed history and clinical examinations, lab test, radiological examinations. Lab test include routine hemogram, liver function test (LFT), kidney function test (KFT), serum Ca<sup>++</sup>/PO<sub>4</sub>, lipid profile, serum amylase/lipase, fasting blood sugar (FBS), 1-hour post-prandial blood sugar (PPBS), glycated hemoglobin (HbA1c) was taken in to consideration. In imaging studies like X-ray, ultrasonography (USG), computed tomography (CT) abdomen and other investigations relevant to the suspected disease were done. From the above clinical data and imaging studies chronic pancreatitis was diagnosed. Patients who require surgical intervention were prepared and taken up for drainage procedure after satisfying the inclusion and exclusion criteria. The results were tabulated and analysed.

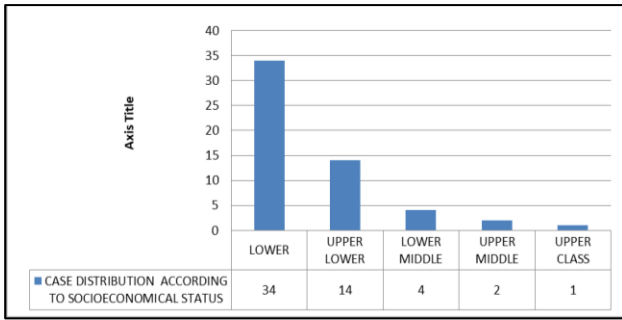
**RESULTS**

In Figure 1, the age group distribution is shown. 1-10 age group distribution has 1 (1.8 %) no of cases whereas 11-20 group has 21 (38.18%), 21-30 group has 8 (14.54%), 31-40 group has 15 (27.27%), 41-50 group has 6 (10%), 51-60 group has 1 (1.8%) and >60 group has 3 (5.4%) patients. Further in the study sample 37 patients (68%) were male and 18 patients (32%) were female.



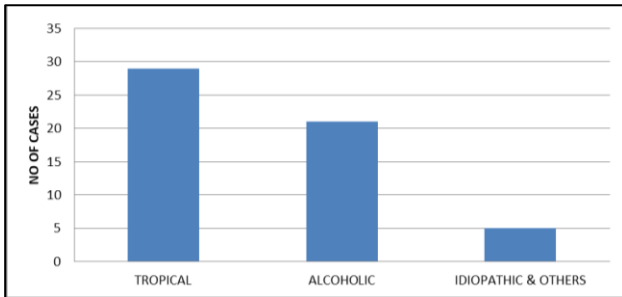
**Figure 1: Distribution of cases according to age group.**

In Figure 2, the socioeconomic status of the study sample is shown. 34 patients (62%) belonged to the lower class, 14 patients (26%) belonged to upper lower class, 4 patients (7%) to lower middle class, 2 patients (3%) to upper middle class and only 1 patient belonged to upper class.



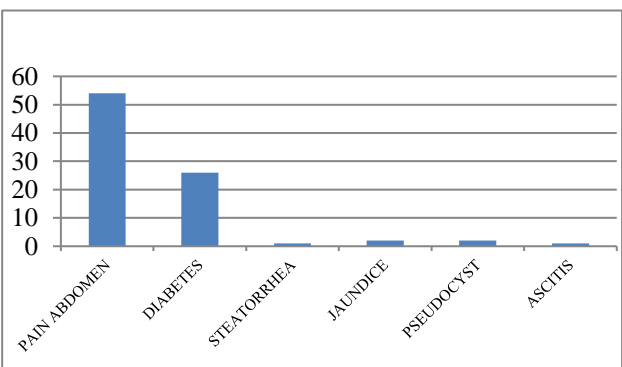
**Figure 2: Case distribution according to socioeconomic status.**

In Figure 3, the etiological distribution of the study sample is shown. 29 patients (53%) showed tropical etiology, 21 patients (37%) showed alcoholic and 5 patients showed idiopathic.



**Figure 3: Distribution of cases according to etiology.**

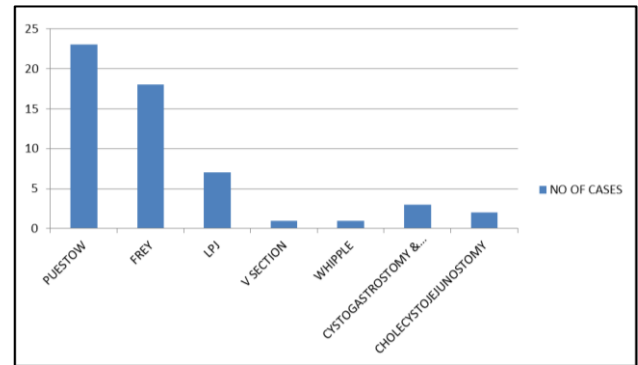
Figure 4 shows the sign and symptoms (clinical) of the study sample. 54 patients (98%) showed abdominal pain, 26 patients (47%) had diabetes (type 2), 1 patient showed steatorrhea, 2 patients (4%) had jaundice, 2 patients (4%) had pseudocyst and 1 patient (2%) had ascites.



**Figure 4: Clinical feature among the cases.**

Figure 5 shows surgical drainage procedure performed on the patients 23 patients (42%) underwent Pvestow lateral (longitudinal) pancreatic jejunostomy, 18 patients (33%) underwent frey, 7 patients (13%) had lateral pancreatic jejunostomy, 1 patient (2%) had V section, 1 patient (2%) underwent whipple, 3 patients (5%) had cystogastrostomy

and cystodudenostomy and 2 patients (3%) underwent cholecystojejunostomy.



**Figure 5: Operative procedure.**

**DISCUSSION**

The youngest patient in this study was 9 years old female and oldest patient was 68 years old male. Most of the patients presented in the 2<sup>nd</sup> decade of life in this study group. Males are affected more than female patient in the ratio of 2: 1 in this study group. In this study, the most common etiology is due to tropical chronic pancreatitis (TCP) (53%) followed by alcoholic (37%) and idiopathic and rest (10%). TCP can be defined as a juvenile form of chronic calcific non-alcoholic pancreatitis prevalent almost exclusively in the developing countries of the tropical world. Some of its distinctive features are younger age at onset, presence of large intraductal calculi, an accelerated course of the disease leading the end points of diabetes and/or steatorrhea.<sup>4</sup>

Chronic alcoholism is also one of the important etiological factor in chronic pancreatitis. Alcohol abuse also affects the clinical feature, course and prognosis of disease. In upto 70% of adult patient chronic pancreatitis appears to be caused by alcoholism. This form is more common in men than women between age of 30 to 40. Hereditary pancreatitis usually begins in childhood but may not be diagnosed for several years. A determining factor is two or more family members with pancreatitis in more than one generation. In our series 30% of the patients were smoker. Smoking is a recognized risk factor associated with chronic pancreatitis. It also accelerates the progression of the disease. It is now recognized as an independent risk factor for chronic pancreatitis.<sup>5</sup>

In our study common clinical presentation was recurrent episodes of pain in epigastrium radiating to back, other features include diabetes, weight loss, steatorrhea, anorexia. For most patients with chronic pancreatitis abdominal pain is the presenting symptom. Either the patient's age or the etiology of the disease has some influence in it. Most patients experience intermittent attack of pain at unpredictable intervals, while minority of patients experience chronic pain.<sup>6,7</sup> The natural history of pain in chronic pancreatitis is highly variable. Other

symptoms include diarrhea and weight loss. This may be due either to fear of eating (post prandial exacerbation of pain) or due to pancreatic exocrine insufficiency and steatorrhea. A small percentage of patients (20%) have painless chronic pancreatitis, and present with signs and symptoms of exocrine and endocrine insufficiency.

In this study diagnosis of chronic pancreatitis is based on the thorough history, physical examination laboratory data or imaging abnormalities. Imaging methods done in this study were plain abdominal radiographs which revealed the presence of focal or diffuse pancreatic calcifications in 25 to 30% of the cases, transabdominal ultrasound which showed pancreatic duct dilatation irregularly of main pancreatic duct, loss or reduction of pancreatic parenchymal echogenicity, calculi and calcifications. CT scan abdomen findings showed pancreatic duct dilation, calcification and cystic lesions. Imaging modalities like endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasound (EUS) are more sensitive and specific in diagnosis of chronic pancreatitis.<sup>8</sup> Plain abdominal radiography shows focal or diffuse pancreatic calcifications in 30 to 40% of cases makes the diagnosis of advanced chronic pancreatitis. Transabdominal USG is an essential tool to visualize the entire pancreas. It is inexpensive, simple, noninvasive, widely distributed, well tolerated and often first imaging method in patient with abdominal complaint. In routine clinical situation, USG is the easiest method to detect the complication of chronic pancreatitis and to follow patients with chronic pancreatitis. Use of ultrasound for diagnosing chronic pancreatitis is limited to advanced stage. USG mainly give information about parenchymal morphology, duct abnormality, calcification and calculi, pseudocyst/mass and morphology of biliary tree. CT scan is as specific as ultrasound but more sensitive. CT scan cannot detect early parenchymal changes and effects on small pancreatic ducts, but advanced stages and complications of the disease can be evaluated with high reliability. CT is most sensitive to detect calculi. Chronic pancreatitis is excellent method to detect advanced stage but not for early stage of chronic pancreatitis. ERCP is still "gold standard" imaging modality. An ERCP staging system based in pancreatic ductal changes has been developed for diagnosis of chronic pancreatitis which was published in 1984 as the Cambridge criteria. Changes of early chronic pancreatitis may not be seen on ERCP.

ERCP is invasive method (post ERCP pancreatitis of 3 to 7%), expensive, specialized equipment and trained personal are necessary to perform the procedure and to interpret the pancreatograms. ERCP may be useful in distinguishing chronic pancreatitis from pancreatic cancer. The advantage of ERCP are standardization and evaluation method in multi center trials and possibility of intervention.

Magnetic resonance imaging pancreatography an imaging method is created that enables clinicians to visualize ductal of chronic pancreatitis. The advantage of this modality is

noninvasiveness. The major disadvantage is that changes of side branches are not visualized with same accuracy as in ERCP and not sensitive to detect early stages of chronic pancreatitis. Endoscopic ultrasound visualizes the pancreatic duct and the parenchyma and has the ability to detect chronic pancreatitis in patients with early stages of the disease and with advanced chronic pancreatitis.<sup>9,10</sup> Major advantage of EUS when compared to other imaging modalities is that its ability to detect early stages of chronic pancreatitis without any complications. The disadvantage of this method is need for expert EUS endoscopist and dedicated EUS unit.

In this study patients with refractory intractable abdominal pain are selected and taken up for surgical drainage procedure. The most common surgical drainage procedure done was modified peustows LPJ. The overall surgical outcome in the form of pain relief in the study group was approximately 64%. In the study group out of 55, 20 (36%) patients in the follow up period came with recurrence of pain. The treatment of chronic pancreatitis is complex and often an interdisciplinary approach is indicated with the possibility of conservative endoscopic and surgical therapy. When weight loss or steatorrhea (15 g/day) or both develop supplementation is indicated. The main goal is to ensure the optimal amounts of lipase reach the duodenum together with the delivered food. With the currently available pancreatic enzymes supplement preparation azotorrhea can be abolished, where assteatorrhea can be reduced but not totally corrected. Side effects are rare except soreness of mouth, perianal irritation, abdominal pain, diarrhoea, constipation, allergic reaction and fibrosing colonopathy in cystic fibrosis patient. Dose of lipase: 2500 u lipase/kg body weight per meal. Pain significantly reduces patient's quality of life and so main goals of conservative treatment is to manage it, medical treatment is generally the first line therapy in patients with painful chronic pancreatitis.<sup>11</sup> Alcohol abstinence and diet advice are recommended but only 50% of patients achieve pain relief. Analgesics such as non-narcotics and NSAIDs agents are recommended as first step. An antidepressant may have an effect on pain and increase the effect of opiates. Interventional endoscopy and lithotripsy seem to be beneficial in cases with main pancreatic duct stenosis and obstructing calculi. Further studies are needed to evaluate the effect of pancreatic duct interventions on pancreatic pain. About 80% of patient with chronic pancreatitis can be manage by direct recommendations and pancreatic enzyme supplements. 10 to 15% of patients need oral supplements, 5% need enteral tube feeding and approximately 1% need total parenteral nutrition. Reduction of steatorrhea and supplementation of calories are the main goals of nutritional therapy in chronic pancreatitis.

The surgical treatment of chronic pancreatitis is based on two main concepts. Preservations of tissue via drainage operation is the goal for protection against further loss of pancreatic function. Resective procedures are performed in the case of a non-dilated pancreatic duct, if the

pancreatic head is enlarged or if a pancreatic carcinoma is suspected in addition to chronic pancreatitis. Pancreatic duct spinceterotomy was one of the first surgical procedures proposed for patient with chronic pancreatitis and (stenosis) at the papilla of Vater. This procedure was recognized as a dangerous approach and lower success rates for amelioration of pain.<sup>12</sup>

More successful in patient with chronic pancreatitis and with dilated pancreatic duct is the original Puestow procedure or its modification by Partington and Rochelle. The procedure includes resection of the tail of pancreas followed by a longitudinal incision along the body of the pancreas and an anastomosis with a Roux en Y loop of jejunum. The modification of Partington and Rochelle is the elimination of the resection of the pancreatic tail. Patient with a dominant mass in the head of the pancreas and a dilated pancreatic duct do not profit from a drainage procedure only.<sup>13</sup> In addition to the drainage approach Beger and Izbicki proposed excavation of the head of the pancreas or the V shaped excavation of the body along the main pancreatic duct followed by a pancreaticojejunostomy. Whipple's procedure, Pylorus preserving pancreaticoduodenectomy, Beger procedure, Berne modification of the Beger procedure (DPPHR) are the various resection procedure with merits and demerits.

DPPHR preserved the duodenum when compared to the Whipple's procedure, which was the standard procedure in patient with chronic pancreatitis for a long time. Patient who underwent Beger procedure had greater weight gain, better glucose tolerance and high insulin secretion capacity. Improved pain status, lower frequency of acute episodes of chronic pancreatitis, rate need for further hospitalization, low early and late mortality rates and restoration of quality of life, DPPHR seems to be able to delay the natural course of the chronic pancreatitis.<sup>14</sup> Frey procedure which involve local pancreatic head excision, combined with longitudinal pancreaticojejunostomy can be considered as a standard procedure in chronic pancreatitis and has under gone evaluation in multiple trails, confirming its effectiveness as a surgical procedure for chronic pancreatitis.<sup>17</sup> Pancreatic left resection and central pancreatectomy (segmentectomy) in chronic pancreatitis are procedure which further studies to prove the effectiveness in chronic pancreatitis.

Laparoscopic surgery can be performed successfully to manage patients with distal chronic pancreatitis and patients with pancreatic pseudocyst.<sup>15,16</sup> Analysis of literature suggests that laparoscopic resection of the left part of pancreas, when indicated in selected groups, produces excellent results, pain relief was achieved in 72% of patients. Laparoscopic intraluminal cystogastrostomy and laparoscopic anterior cystogastrostomy are safe and effective methods to treat symptomatic large pseudocyst (>6 cm in diameter).

## CONCLUSION

In our study most of the patients presented in their second-third decades of life with frequency of males being affected more than females in the ratio 2:1. Further chronic pancreatitis was more prevalent among socioeconomically lower status. Highest incidence of chronic pancreatitis was due to TCP therefore TCP was juvenile form of chronic calcific non-alcoholic pancreatitis prevalent almost exclusively in the developing countries of the tropical world. Another interesting finding was 47% of patients of chronic pancreatitis presented with type 2 diabetes mellitus. The Puestow's procedure was the most commonly performed surgical drainage procedure with satisfactory results. Finally, the post-operative pain relief was encouraging at 64% in the study group.

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