

## Original Research Article

# Clinical profile and management of chronic pancreatitis in tertiary care centre

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## ABSTRACT

**Background:** Chronic pancreatitis is a multifactorial disease, with a wide range of symptoms and geographic variation. Aim of this study is to study clinical profile and management of chronic pancreatitis with respect to demography, clinical findings, lab parameters, imaging investigations and management modalities.

**Methods:** A cross sectional observational study was conducted which included the patients admitted in tertiary care centre presenting with clinical diagnosis of chronic pancreatitis. The study was conducted over period of 2 years from November 2019 to October 2021. A total sample size of 71 patients were included.

**Results:** In the study, it was observed that majority of patients in age group of 51-60 years which were male (76.06%). Alcoholism (43.66%) was most common etiology and presented with pain in abdomen (85.92%). In the present study, majority of patients were managed conservatively (43.66%). The distribution of patients according to pain relief by various management showed that majority of get relief of pain by surgery (69.23%).

**Conclusions:** Chronic pancreatitis is progressive inflammatory disease. Alcoholic pancreatitis being most common etiology. Pain is most common presenting symptom. CT-SCAN abdomen most useful in confirming diagnosis in our set up. Pseudocyst being common complication seen. Surgery gives relief of pain in most of the cases.

**Keywords:** Chronic pancreatitis, Alcohol, Pseudocyst

## INTRODUCTION

Constant inflammation and irreversible pancreatic tissue destruction are hallmarks of the disease of chronic pancreatitis, which results in the gradual loss of both exocrine and endocrine function.<sup>1</sup> It is a multifactorial disease, with a wide range of symptoms and geographic variation. The incidence of chronic pancreatitis in the western population ranges from 8 to 10 cases yearly per 100,000 population, and the overall prevalence is 27.4 per 100,000 per year.<sup>2</sup> According to a recent survey conducted in various countries in the Asia-Pacific region, chronic pancreatitis is prevalent in Southern India, with 114-200 cases per 100,000 people.<sup>3</sup> In the Indian

subcontinent, there has been no systematic nationwide study on the management of clinical profiles.<sup>3</sup>

Some of the possible causes of chronic pancreatitis include alcohol abuse (malignancy or stones), ductal obstruction (cystic fibrosis or hereditary pancreatitis), chemotherapy and autoimmune diseases such as SLE or pancreatitis. According to recent research, the disease may be caused by a lack of certain vitamins and antioxidants.<sup>4,5</sup> Drinking alcohol is the most common cause. Protein secretion from acinar cells increases, resulting in ductal obstruction, acinar fibrosis, and atrophy as a result of the alcohol.<sup>4,5</sup> Chronic pancreatitis appears to be caused by a combination of genetic and environmental factors. Several genes have been linked to

pancreatitis susceptibility mutations. Chronic pancreatitis is thought to be caused by one of two different pathogens. Impaired bicarbonate secretion, which is unable to respond to increased pancreatic protein secretion, is one possibility. Plugs are formed within the lobules and ducts as a result of this abundance of proteins. Calcification and stone formation are the results of this process. The other theory proposes that digestive enzymes in the pancreas are activated intraparenchymally (possibly due to genetics or external influences such as alcohol).<sup>6</sup>

Reduced pain and improved absorption are the main objectives of treatment. Inflammation, neuropathic mechanisms, and blocked ducts are all factors that contribute to the sensation of pain that we feel. The replacement of fat-soluble vitamins and pancreatic enzymes is generally recommended along with frequent, small, low-fat meals.<sup>6</sup> There are only a few reports on the Indian subcontinent as a whole. The vast majority of research is based on studies of people in western countries. Several studies have shown that chronic pancreatitis has changed its clinical profile in certain regions of the country.<sup>7</sup> Therefore, we conducted a detailed study of the clinical profile of chronic pancreatitis to confirm whether these changes in clinical profile & Management of chronic pancreatitis are present in this part of country also.

## METHODS

### Study design, location and duration

The present hospital based observational cross-sectional study conducted to study clinical profile and management of chronic pancreatitis was conducted at department of general surgery, NKP salve medical college and RC and Lata Mangeshkar Hospital, Nagpur. The study was conducted over period of 2 years from November 2019 to October 2021.

### Study population and sample size

The study population was patients admitted in tertiary care center presenting with clinical diagnosis of chronic pancreatitis. By keeping the confidence limits at 95% and power of study at 80%, to detect a minimum of 10% difference in proportion of effect, a total sample size of 71 patients were included. The sample size was calculated based on previous published reports by Shakeel et al using the formula;

$$n = 4P \times (1 - P) / L^2$$

Where P=percentage of chronic pancreatitis due to alcohol is 66.6% which is equal to 67%. So values taken in the formula were p=67%,  $\alpha$ =5%,  $\beta$ =10%, L=absolute precision=±10%. The required sample size is n=71 Hence, a minimum sample size of approximately 71 cases during study period was included in present study.

Data will be coded and analyzed in a statistical software STATA, version 10.1, 2011.

### Inclusion criteria

Patients of age 18 years and above who are diagnosed as cases of chronic pancreatitis on contrast enhanced computed tomography (CECT) abdomen findings were included in the study.

### Exclusion criteria

Patient not consenting to join the study or get investigated or treated were excluded from the study.

## RESULTS

It was observed that majority of patients were in age group 51-60 years (47.89%) followed by 41-50 years (21.12%) The mean age of the patients was 56.54±12.63 years.

**Table 1: Distribution according to age (n=71).**

| Age group (years) | N         | %          |
|-------------------|-----------|------------|
| <20               | 00        | 00.00      |
| 21-30             | 03        | 04.23      |
| 31-40             | 07        | 09.86      |
| 41-50             | 15        | 21.12      |
| 51-60             | 34        | 47.89      |
| >60               | 12        | 16.90      |
| <b>Total</b>      | <b>71</b> | <b>100</b> |

**Table 2: Distribution of patients according to sex (n=71).**

| Sex           | N         | %            |
|---------------|-----------|--------------|
| <b>Male</b>   | <b>54</b> | <b>76.06</b> |
| <b>Female</b> | <b>17</b> | <b>23.94</b> |
| <b>Total</b>  | <b>71</b> | <b>100</b>   |

**Table 3: Distribution of patients according to etiology (n=71).**

| Etiology                   | N         | %            |
|----------------------------|-----------|--------------|
| <b>Alcoholism</b>          | <b>31</b> | <b>43.67</b> |
| <b>Gall/Biliary stones</b> | <b>15</b> | <b>21.12</b> |
| <b>Post- operative</b>     | <b>04</b> | <b>05.63</b> |
| <b>Idiopathic</b>          | <b>21</b> | <b>29.57</b> |
| <b>Total</b>               | <b>71</b> | <b>100</b>   |

It was observed that majority of patients were in age group 51-60 years (47.89%) followed by 41-50 years (21.12%) The mean age of the patients was 56.54±12.63 years. It was observed that majority of patients had etiology of alcoholism (43.67%) followed by idiopathic (29.57%), gall stones (21.12%) and post-operative (5.63%). It was observed that majority of patients

presented with pain in abdomen (85.92%) followed by nausea/vomiting (60.56%), Steatorrhea (46.67%), weight loss (32.39), constipation (29.58%) and diarrhea (15.49%).

**Table 4: Distribution of patients according to clinical presentation (n=71).**

| Clinical presentation | N  | %     |
|-----------------------|----|-------|
| Pain abdomen          | 61 | 85.92 |
| Nausea/vomiting       | 43 | 60.56 |
| Steatorrhea           | 33 | 46.47 |
| Weight loss           | 23 | 32.39 |
| Constipation          | 21 | 29.58 |
| Diarrhea              | 11 | 15.49 |

**Table 5: Distribution of patients according to USG findings (n=71).**

| USG findings             | N  | %     |
|--------------------------|----|-------|
| Pancreatic calcification | 39 | 54.93 |
| Pancreatic pseudocyst    | 23 | 32.39 |
| Gall stones              | 14 | 19.72 |
| Pancreatic head mass     | 04 | 5.63  |

**Table 6: Distribution of patients according to CT findings (n=71).**

| CT findings               | N  | %     |
|---------------------------|----|-------|
| Pancreatic calcification  | 50 | 70.42 |
| Enlargement of pancreas   | 32 | 45.07 |
| Pancreatic pseudocyst     | 23 | 32.39 |
| Dilatation of MPD         | 17 | 23.94 |
| Pancreatic Calculi        | 09 | 12.67 |
| Pancreatic duct stricture | 05 | 07.04 |
| Pancreatic head mass      | 04 | 5.63  |

**Table 7: Distribution of patients according to complications (n=71).**

| Complications           | N  | %     |
|-------------------------|----|-------|
| Pseudocyst              | 23 | 32.39 |
| Splenic vein thrombosis | 02 | 02.82 |
| Pancreatic neoplasm     | 01 | 01.41 |

It was observed that majority of patients shows pancreatic calcification (54.93%) followed by Pancreatic pseudocyst (32.39%) gall stones (19.72%) and pancreatic head mass (5.63%). It was observed that majority of patients shows pancreatic calcification (70.42%) followed by enlarged pancreas (45.07%), pancreatic pseudocyst (32.39%), dilatation of MPD (23.94%), pancreatic calculi (12.67%), pancreatic duct stricture (7.04%) and pancreatic head mass (5.63%). It was observed that majority of patients shows pseudocyst (32.39%) followed by splenic vein thrombosis (2.82%) and pancreatic neoplasm (1.41%). No complications were seen in 43 (60.56%) patients. It was observed that majority of patients managed

conservatively (38.02%) followed by cystogastrostomy (18.31%) and cystojejunostomy (8.45%). ERCP was done among 14 (19.72%) patients and pancreaticoduodenectomy (classical Whipples) in 4 (5.63%) patients. It was observed that majority of get relief of pain by surgery (60%) followed by ERCP (35.71%) and least by conservative/analgesics (7.41%).

**Table 8: Distribution of patients according to management (n=71).**

| Management                                   | N  | %     |
|----------------------------------------------|----|-------|
| Conservative                                 | 27 | 38.02 |
| Cystogastrostomy                             | 13 | 18.31 |
| Cystojejunostomy                             | 07 | 9.86  |
| LPJ                                          | 06 | 8.45  |
| ERCP stenting                                | 14 | 19.72 |
| Pancreaticoduodenectomy (classical Whipples) | 04 | 5.63  |
| Total                                        | 71 | 100   |

**Table 9: Distribution of patients according to pain relief (follow up after 2 years).**

| Management                     | N  | %     |
|--------------------------------|----|-------|
| Surgery (n=30)                 | 18 | 60.00 |
| ERCP stenting (n=14)           | 05 | 35.71 |
| Conservative/analgesics (n=27) | 02 | 7.41  |

## DISCUSSION

Constant inflammation and irreversible pancreatic tissue destruction are hallmarks of the disease of chronic pancreatitis, which results in the gradual decrease of both endocrine and exocrine function. The present observational cross-sectional study carried out at Tertiary Institute to find out clinical profile and management of chronic pancreatitis. All patients of chronic pancreatitis who attended or getting admitted in the tertiary care centre were enrolled in study during the study period of November 2019 to October 2021.

A sample size of 71 patients with chronic pancreatitis above age 18 years were included in the study. Patients not giving consent to participate in the study were excluded from study. A written and well-informed consent was obtained from the participant patient or his/her relatives. The study was started after approval from the ethical committee of the Institute. All the patient's demographic history with clinical examination were done and were investigated for basic investigations like CBC, ultrasound scan, CT-abdomen and MRI were performed. In the present study, it was observed that majority of patients in age group of 51-60 years (47.89%) followed by 41-50 years (21.12%). Mean age ranges from 56.54±12.63 years. Machicado et al did a study with an aim of assessing the natural course of chronic pancreatitis in a population-based cohort and observed the median age of chronic pancreatitis was 56 years.

José Lariño-Noia et al in a study on morphological and functional changes of chronic pancreatitis observed mean age of subjects was  $46.4 \pm 13.8$  years.<sup>9</sup> Hari SS et al in a study on chronic pancreatitis and its management observed mean age was 38.45 years.<sup>10</sup> Panda CR et al conducted comparative study for clinical profile of CP during last 1 year (Group A) and cases during previous 5 years (Group B) observed that in Group A mean age was  $35.70 \pm 13.08$  years and in Group B was  $39.16 \pm 13.12$  years.<sup>11</sup> In the present study, it was observed that majority of patients were male (76.06%) and females were 23.94%. Machicado et al conducted a study with aim of assessing the natural course of CP in a cohort study observed 56% patients were male.<sup>8</sup> Hari et al in a study on chronic pancreatitis and its management observed out of 24 patients, nineteen males and five females were found, having a sex ratio of 1:4.<sup>10</sup> Panda et al did a comparative study for clinical profile of recently admitted cases of CP during last 1 year (Group A) and cases during previous 5 years (Group B) observed male patients predominate in both the groups.<sup>11</sup> Noia et al in a study on morphological and functional changes of chronic pancreatitis observed among 218 patients with CP, 140 (64.22%) were females.<sup>9</sup> This was in contrast to present study. The distribution of patients according to etiology showed that majority of patients had etiology of alcoholism (43.66%) followed by Idiopathic (29.57%), gall/biliary stones (21.12%) and post-operative (05.63%). In our study Idiopathic was 2<sup>nd</sup> major cause for Chronic pancreatitis as no investigation showed the cause for chronic pancreatitis so was labelled as idiopathic. Upto 30% of chronic pancreatitis patients were idiopathic. Hari et al in a study on chronic pancreatitis and its management observed alcoholic chronic pancreatitis was seen in 16 patients. Tropical pancreatitis was seen in 4 patients of the cases. The most common cause of clinical admission is Pain. It is the hallmark symptom of CP, usually epigastric radiation to the back or to the left upper abdomen. It is the most vexing clinical problem and the most common indication for surgical intervention. In our study, pain was treated with NSAIDS, antispasmodics, pancreatic enzyme suppressants and pain modifying agents (pergablin). The complications of chronic pancreatitis like an acute attack of pancreatitis, from a pancreatic pseudocyst, portal or splenic vein thrombosis can cause pain. In the present study, it was observed that majority of patients presented with pain in abdomen (85.92%) followed by nausea/vomiting (60.56%), steatorrhea (46.47%), weight loss (32.39%), constipation (29.58%) and diarrhea (15.49%). Steatorrhea and weight loss are important features of chronic pancreatitis. Steatorrhea does not occur until pancreatic lipase secretion is reduced to less than 10% of normal. Maldigestion of lipids occurs earlier, since lipase secretion decreases more rapidly than amylase secretion. Exocrine insufficiency occurs in 80% to 90% of patients with long standing chronic pancreatitis. In our study Weight loss seen in 23 (32.39%) patients, were due to steatorrhea. Machicado et al in a study observed that pain in abdomen was present in 68 (76%) patients and

diabetes was noted in 36 (40%) patients. This finding was similar to present study.<sup>8</sup> Hari et al in a study on chronic pancreatitis and its management observed pain was seen in 22 patients (91.6%), 6 patients had diabetes mellitus, 2 patients had steatorrhea (8.3%).<sup>10</sup> Panda et al did a comparative study for clinical profile of recently admitted cases of CP during last 1 year (group A) and cases during previous 5 years (group B) observed pain was the most common presentation in both groups.<sup>11</sup> Ammann et al and Fasanella et al in their respective studies observed most patients with CP have abdominal pain.<sup>12</sup> Pain in CP is multifactorial, with inflammatory and neuropathic components. The pain is believed to be primarily due to obstruction of the pancreatic duct by either stricture or stone, resulting in high pressure and ischemia above the obstruction. The distribution of patients according to USG findings showed that majority of patients shows pancreatic calcification (54.93%) followed by pancreatic pseudocyst (32.39%) and gall stones (19.72%).

Transabdominal ultrasonography is an inexpensive technique usually performed in patients with suspected CP. Calcification, and cysts and are detected with by this modality. Other complications of pancreatitis such as duodenal or gastric distention and bile duct dilatation can be visualized. In patients with excessive abdominal gas or acute pancreatitis associated with ileus, the view is often limited, making the procedure highly related to the investigator's skills. Nevertheless, sonography is a simple technique and, in the hands of experienced investigators, remains a useful method for rapid and reliable diagnosis. In our study, it was useful to note pseudocyst in 23 patients (32.39%) of cases, gall stones and pancreatic calcification. Machicado et al in a study observed that of 69% patients had pancreatic calcifications and 29% had pseudocyst or fluid collections.<sup>8</sup> Hari et al in a study on chronic pancreatitis and its management observed ultrasonogram that showed 9 patients (37.5%) had dilated MPD.<sup>10</sup> Panda et al conducted study on the clinical profile of cases of CP and noted USG findings of pancreatic calcification in 78.45% patients of CP.<sup>11</sup> This finding was similar to present study.

The distribution of patients according to CT findings showed that majority of patients shows pancreatic calcification (70.42%) followed by enlarged pancreas (45.07%), pancreatic pseudocyst (32.39%), dilatation of mpd (23.94%), pancreatic calculi (12.67%) and pancreatic duct stricture (7.04%). Machicado et al in a study observed pancreatic duct dilation was noted in 57% patients and common bile duct dilation in 26% patients.<sup>8</sup> Hari et al in a study on chronic pancreatitis and its management observed CECT Abdomen scan showed 9 patients (37.5%) had dilated main pancreatic duct (MPD).<sup>10</sup> Sharma et al observed ductal dilatation (n=55, 100%) and calculi (n=43, 83.6%) were the most common findings on imaging using computed tomographic scan of abdomen.<sup>11</sup> The distribution of patients according to complications showed that majority of patients shows pseudocyst (32.39%) followed by splenic vein

thrombosis (2.82%), and pancreatic neoplasm (1.41%). No complications were seen in 43 (60.56%) patients. Pancreatic pseudocyst is the most common complication of chronic pancreatitis, occurring in the course of the disease in as many as 20%-38% of patients. Most pseudocysts resolve spontaneously with supportive care. In our study, all patients with pseudocyst presented to us as pain in abdomen 23 patients (32.39%), in 3 patients resolved spontaneously hence managed conservatively. Patients with pseudocyst, with cyst wall 6mm, with surgically feasible pathology, depending on position of cyst patients underwent cystogastrostomy and cystojejunostomy. No percutaneous drainage not done. Panda et al did study on clinical profile of cases of CP and observed the complications like pseudocyst (8.81%) followed by pleural effusion (3.81%) Bhasin et al observed pseudocyst was the most common local complication in a study on clinical profile of idiopathic chronic pancreatitis in North India.<sup>11,14</sup>

Sharma et al observed 9 patients (16.4%) had evidence of pseudocyst.<sup>13</sup> None of the patients had biliary obstruction, pancreatic neoplasm, ascites. Surgery is indicated when the pain is severe, not managed by analgesics, requiring repeated hospital admission, and is interfering with day-to-day activities and pathology was corrected by surgical procedure. The aim of the surgery should be to: preservation of maximum functional pancreatic tissue. Removal of the inflammatory pathology. Ductal system drainage. Not obstructing the side ducts. In the present study, it was observed that majority of patients were managed conservatively (43.66%) followed by cystogastrostomy (18.31%) and cystojejunostomy (8.45%). ERCP was done among 14 (19.72%) patients. Lateral pancreaticojejunostomy was done in 6 (8.45%) patients and pancreaticoduodenectomy (classical Whipple's) was done in 4 patients (5.63%). Machicado et al did a comparative study observed endoscopic or surgical interventions for CP were performed in 27 (30%) patients during the disease course.<sup>8</sup> A total of 20 (23%) patients underwent at least one endoscopic intervention, 10 (11%) at least one surgical intervention, and 3 (3%) both types of interventions. Hari et al conducted study on chronic pancreatitis and its management observed only 9 out of 24 (37.5%) patients were managed conservatively.<sup>10</sup> In our study, 4 patients with pancreatic head mass were operated for pancreaticoduodenectomy (classical Whipple's) and had no post operative complication, histopathology report turned out to be benign. The distribution of patients according to pain relief by various management showed that majority of get relief of pain by Surgery (69.23%) followed by ERCP (35.71%) and least by conservative/analgesics (6.45%). Sharma et al observed that more than half of the study patients did not improve with the standard pain management by analgesics and had persistent symptom.<sup>13</sup> In cochrane review by Ali et al comparative study done with objective of to assessing and comparing the effects and complications of surgical and endoscopic interventions in the management of pain for chronic obstructive pancreatitis in 111 patient's and concluded

that the surgical group had a higher number of patients with pain relief, both at long-term follow-up.<sup>15</sup> Surgical intervention resulted in improved quality of life and preservation of exocrine pancreatic function at middle/long-term follow-up (2-5 years), but not at long-term follow-up. Another study conducted in year 2020 by Yama Issa et al with objective of to see whether early surgery is more effective than the endoscopy-first approach and concluded that patients with chronic pancreatitis, early surgery compared with an endoscopy resulted in lower pain scores.<sup>16</sup> Another study conducted in year 1997 by Traverso et al with objective to analyze the clinical indications and long-term results for the classical Whipple procedure (pancreaticoduodenectomy) used for severe complications of chronic pancreatitis (CP) and concluded that, Whipple procedure for severe complications of CP in the pancreatic head is a safe and effective operation.<sup>17</sup> Cahen et al conducted a randomized trial in year 2011 that compared endoscopic and surgical drainage of the pancreatic duct in patients with chronic pancreatitis reported a significant benefit of surgery after a 2-year follow-up period and evaluated the long-term outcome of these patients after 5 years and concluded that in the long term, symptomatic patients with chronic pancreatitis who underwent surgery as the initial treatment for pancreatic duct obstruction had more relief from pain, than patients who were treated endoscopically.<sup>18</sup> In our study, minimal wound infection was seen in 3 of operated patients and was easily controlled. There was no mortality. In our study only 27 out of 71 (38.02%) patients were treated conservatively by pancreatic enzyme supplementation and analgesics. Primarily, Chronic pancreatitis is not a surgical disease. Surgery is indicated only when medical treatment fails and/or complication arises. There is no single ideal operation for chronic pancreatitis. Selection of an appropriate method of management for a particular patient is more important.

### Limitations

Our sample size was limited because of COVID-19 pandemic. A greater sample could have provided more insights on clinical and etiological presentation. We did not follow the patients after discharge from hospital which would have provided more details on short and long-term outcomes of patients with chronic pancreatitis.

### CONCLUSION

Primarily, chronic pancreatitis is not a surgical disease, Surgery is indicated only when medical treatment fails and/or complication arises. There is no single ideal operation for chronic pancreatitis. Selection of an appropriate method of management for a particular patient is more important.

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