

Evaluation of Patients Undergoing Surgical Management for Tropical Chronic Pancreatitis at a Tertiary Care Hospital

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ABSTRACT

Background: Tropical chronic pancreatitis (TCP) represents a juvenile variant of chronic calcific non-alcoholic pancreatitis, predominantly observed in the developing regions of the tropical world. Hence; the present study was conducted for evaluating patients undergoing surgical management for tropical chronic pancreatitis (TCP).

Materials & Methods: A cohort of 100 patients was assessed in this study. The evaluation was limited to individuals diagnosed with TCP, while cases of chronic alcoholic pancreatitis were deliberately excluded. Comprehensive clinical histories and physical examinations were conducted, followed by routine hematological and biochemical testing for all participants. A thorough preoperative assessment was performed for each patient, all of whom subsequently underwent surgical procedures. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results: Mean age of the patients was 50.8 years. 65 percent of the patients were males. Pain along with steatorrhea was the most common finding followed by jaundice, pseudocyst and ascites. Frey procedure, Whipple procedure, Partington-

Rochelle procedure, Cysto-gastrotomy and Cysto-jejunostomy was done in 53 percent, 18 percent, 10 percent, 8 percent and 5 percent of the patients respectively.

Conclusion: Frey's procedure is, in our assessment, the most effective surgical intervention for treating TCP when compared to alternative drainage techniques.


Key words: Tropical Chronic Pancreatitis, Surgery.

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INTRODUCTION

Tropical chronic pancreatitis (TCP) represents a juvenile variant of chronic calcific non-alcoholic pancreatitis, predominantly observed in the developing regions of the tropical world. The condition is characterized by a classical triad of symptoms: abdominal pain, steatorrhea, and diabetes. When diabetes manifests, it is referred to as fibrocalculous pancreatic diabetes (FCPD), indicating a more advanced stage of TCP. Notable characteristics of TCP include an earlier age of onset, the presence of substantial intraductal calculi, a more aggressive disease progression, and an increased risk of pancreatic cancer.^{1,2}

The presence of pancreatic calculi is a definitive diagnostic marker for TCP; in cases without calculi, diagnostic imaging techniques such as endoscopic retrograde cholangiopancreatography, computed tomography, or ultrasound can reveal ductal dilation indicative of the disease. The diabetes associated with TCP is typically severe and necessitates insulin therapy, although ketosis

is infrequently observed. Microvascular complications of diabetes occur with a frequency comparable to that seen in type 2 diabetes, while macrovascular complications are relatively rare.^{3,4}

To alleviate abdominal pain and manage symptoms associated with steatorrhea, pancreatic enzyme supplements are administered. Timely diagnosis and improved management of both endocrine and exocrine dysfunction may enhance survival rates and improve the prognosis and quality of life for individuals affected by TCP.^{4,5}

TCP patients present with several distinct clinical features. Earlier reports suggested that patients were poor, extremely emaciated, young (over 90% are below 40 years of age at onset), and emphasised the presence of protein calorie malnutrition, bilateral parotid enlargement, distended abdomen, and sometimes with a cyanotic hue of the lips. However, recent reports suggest a change in the clinical presentation that may be attributed to

improved nutritional status. It is observed that while the majority of patients were lean, severe malnutrition was uncommon; many patients were of ideal body weight and an occasional patient even obese. Most of the patients are aged 10–30 years when the diagnosis is made, but onset of TCP in infancy, childhood, and the elderly is not uncommon. The clinical picture of TCP consists of a triad of: Abdominal pain, Maldigestion leading to steatorrhea and Diabetes.⁵⁻⁸

Hence; the present study was conducted for evaluating patients undergoing surgical management for tropical chronic pancreatitis (TCP).

MATERIALS & METHODS

The present study was conducted for evaluating patients undergoing surgical management for tropical chronic pancreatitis (TCP). A cohort of 100 patients was assessed in this study. The evaluation was limited to individuals diagnosed with TCP, while

cases of chronic alcoholic pancreatitis were deliberately excluded. Comprehensive clinical histories and physical examinations were conducted, followed by routine hematological and biochemical testing for all participants. A thorough preoperative assessment was performed for each patient, all of whom subsequently underwent surgical procedures. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

The mean age of the patients was 50.8 years. 65 percent of the patients were males. Pain along with steatorrhea was the most common finding followed by jaundice, pseudocyst and ascites. Frey procedure, Whipple procedure, Partington-Rochelle procedure, Cysto-gastrotomy and Cysto-jejunostomy were done in 53 percent, 18 percent, 10 percent, 8 percent and 5 percent of the patients respectively.

Table 1: Age-wise distribution

Age group (years)	Number	Percentage
Less than 40	33	33
More than 40	67	67
Total	100	100
Mean age (years)	50.8 years	

Table 2: Gender-wise distribution

Gender	Number	Percentage
Males	65	65
Females	35	35
Total	100	100

Table 3: Clinical profile

Clinical profile	Number	Percentage
Pain	95	95
Steatorrhea	9	9
Jaundice	8	8
Pseudocyst	7	7
Ascites	8	8
Others	5	5

Table 4: Surgical procedure done

Surgical treatment	Number	Percentage
Frey procedure	53	53
Whipple procedure	18	18
Partington-Rochelle procedure	10	10
Cysto-gastrotomy	8	8
Cysto-jejunostomy	5	5
Others	6	6
Total	100	100

DISCUSSION

The pancreas functions as a heterocrine gland, consisting of both exocrine and endocrine components. The exocrine part is made up of ductal cells and pancreatic acinar cells, which produce secretions essential for the digestion of food. In contrast, the endocrine portion plays a crucial role in regulating glucose homeostasis. Pancreatic acinar cells are responsible for the synthesis, storage, and secretion of digestive enzymes. Among these, trypsinogen is particularly significant, as it activates various proteolytic proenzymes in the duodenum. Human pancreatic juice contains three isoforms of trypsinogen, classified based on their relative electrophoretic mobility as cationic trypsinogen (PRSS1), anionic trypsinogen (PRSS2), and mesotrypsinogen (PRSS3). Cationic trypsinogen constitutes approximately two-thirds of the total trypsinogen, while anionic trypsinogen accounts for about one-third. Mesotrypsinogen is a less prevalent form, representing less than 1% of the total trypsinogens or 0.5% of the proteins found in pancreatic juice. is a progressive inflammatory condition affecting the pancreas, characterized by ongoing and irreversible morphological alterations. These alterations include parenchymal fibrosis, calcification, cyst formation, necrosis, and the formation of pancreatic stones. The persistent destruction and remodeling of pancreatic tissue frequently led to a decline in both exocrine and/or endocrine functions. Clinically, this condition is primarily manifested through two significant symptoms: upper abdominal pain and maldigestion.⁸⁻¹⁰

Mean age of the patients was 50.8 years. 65 percent of the patients were males. Pain along with steatorrhea was the most common finding followed by jaundice, pseudocyst and ascites. Frey procedure, Whipple procedure, Partington-Rochelle procedure, Cysto-gastrotomy and Cysto-jejunostomy was done in 53 percent, 18 percent, 10 percent, 8 percent and 5 percent of the patients respectively. In a comparative analysis of tropical chronic pancreatitis (TCP) and alcoholic chronic pancreatitis (ACP) within the same demographic, Chari ST et al examined the clinical characteristics of 50 ACP patients treated at our facilities over the last three years and juxtaposed these findings with those of our TCP patients. A significant proportion (75%) of individuals in both cohorts hailed from Tamil Nadu, and 90% reported no history of cassava consumption. TCP predominantly affected younger individuals of both genders, whereas all ACP patients were male and presented at an older age. The prevalence of pain, diabetes, and pancreatic calcification was comparable across both groups. Although patients in each group exhibited lean physiques, instances of severe malnutrition were infrequent. Notably, prediabetic individuals maintained a normal body mass index. Distinct differences were observed in the radiological characteristics of pancreatic calculi between TCP and ACP. Additionally, three TCP patients were diagnosed with pancreatic malignancy, while benign bile duct stenosis was identified in three ACP patients, a condition absent in TCP cases. In contrast to ACP cases reported in Western populations, our ACP patients experienced a shorter symptom duration despite the presence of advanced disease. These findings suggest that TCP and ACP exhibit unique clinical profiles, potentially influenced by specific environmental factors that may accelerate the progression of ACP in tropical regions.⁹

Rajesh et al. presented their findings on chronic pancreatitis (CP) from Kerala, a region previously noted for a high prevalence of

tropical chronic pancreatitis (TCP). The study encompassed 597 CP cases, comprising 175 instances of alcoholic chronic pancreatitis (ACP) and 390 cases of idiopathic chronic pancreatitis (ICP), with some patients included through retrospective analysis. Among the 390 ICP patients, 205 were prospectively monitored over a period of approximately four years. The results indicated that 54.1% of the ICP patients experienced early onset of the disease, while 45.9% had late-onset, with the cutoff age for classification set at 30 years. Those with early onset ICP had a symptomatic duration of nearly 14 years prior to seeking medical attention, accompanied by a lower incidence of diabetes, which manifested approximately 13 years after the onset of symptoms. In contrast, late-onset ICP patients exhibited a symptomatic period of less than five years, but a higher prevalence of diabetes, which occurred almost concurrently with their presentation. Notably, there were no significant differences between the two groups regarding the risk of pancreatic carcinoma or the development of pseudocysts, suggesting distinct disease profiles. Previous research by Layer et al. indicated that in cases of early onset idiopathic pancreatitis, the progression to calcification and both exocrine and endocrine insufficiencies occurred at a slower rate compared to late-onset idiopathic and alcoholic pancreatitis. While it may be tempting to draw parallels between early onset ICP and TCP as observed in the current Kerala study, the characteristics of early onset ICP appear to diverge from those associated with TCP. Some earlier investigations have defined early versus late-onset ICP using an age threshold of 35 years. A prior study from North India, which included 155 CP patients, found that 41.3% had ICP and 38.1% had ACP, with 64% of the ICP cohort presenting with early onset disease (age <35 years) and 36% with late-onset disease (age >35 years).¹⁰⁻¹³

CONCLUSION

Frey's procedure is, in our assessment, the most effective surgical intervention for treating TCP when compared to alternative drainage techniques.

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