Tropical Pancreatitis

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Tropical pancreatitis is a syndrome characterised by abdominal pain, diabetes mellitus and pancreatic calculi occurring in non alcoholic individuals in the tropics and subtropical regions. The disease is synonymous with tropical calcific pancreatitis, juvenile tropical pancreatitis, nutritional pancreatitis and chronic pancreatitis of the tropics.

The earliest report of this condition was described by Kini in 1937. Mahadevan reported his experience with 17 cases of pancreatic lithiasis in 1959. He treated several patients by external drainage of the pancreatic duct followed by washout of stones for as long as three months. In many of his patients long term pain relief was obtained for about 14 years. The largest series of cases was reported by Professor Gee Varghese in 1966 from Kerala. The disease occur in endemic form in this state of India.

Prevalence
The highest incidence in the world of tropical pancreatitis is in Kerala where 12 to 16% of the diabetics admitted to hospital had pancreatic calcification. A survey amongst newly detected diabetics mellitus under 30 years was carried out at BIRDEM which showed incidence of tropical pancreatitis (TP) is about 6 percent. An average of 40 new cases are diagnosed every year in our Centre.

Aetiology
The aetiology of TP in unknown. The following factors have been implicated:

Malnutrition: Protein calorie malnutrition has been regarded as a likely cause because of the following reasons: a) malnutrition cause suppression of pancreatic function and render it more susceptible to damage by toxins b) TP is mostly reported from developing countries where malnutrition is quite common.

Food Toxin: Cassava a tuber has been implicated as a possible cause. Cyanogenic glycosides and methyl linnamarin is present in Cassava. This tuber has been the simple food of a large section in Kerala. Few people consume cassava in Bangladesh.

Other Factors: Micronutrient deficiency( Selenium, copper and vitamin A) has been implicated as a potential cause. Genetic factors may also playa part and this may account for development of disease in migrant of Kerala who live in the West. Immunologic causes have also been postulated.

Pathology
The pancreas appears small, firm. Changes may be local or diffuse. In advanced stage of disease two types can be recognised: a fibrotic type and an adipose type. A study of the composition of the pancreatic juice in TP revealed a) decrease in volume of pancreatic juice b) normal concentration of bicarbonate and c) high concentration of calcium.

Microscopic features include acinar atrophy with replacement by fibrosis. Islats are spared even in advanced stage of the disease.

Clinical Features
The main symptoms are abdominal pain(70%), diabetes mellitus(55%), weight loss(65%) and obstructive jaundice in 2%. Rarely patient may present with abdominal mass, ascitis or gastrointestinal bleeding. Steatorrhoea was not seen in our series.

Gee Varghese in 1968 described the features of TP as "recurrent abdominal pain in childhood, diabetes at puberty and death at the prime of life." This pattern of presentation
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has changed after 30 years. The male and female ratio was 1.71 and 1.18.

**Complications**

Cysts  
Malignancy  
Pancreatic ascitis  
Pancreatic pleural effusion  
Gastro-intestinal bleeding  
Biliary obstruction.

**Diagnosis**

TP can be diagnosed with certainty if the patient does not consume alcohol and two of the following criteria are positive:

1. Pancreatic calculi on plain X-ray of abdomen  
2. Ultrasound evidence of dilatation of the main pancreatic duct  
3. Endoscopic retrograde cholangiopancreatography (ERCP) evidence of changes of chronic pancreatitis. These features help in diagnosing patients with acalculous disease and those with normal sized ducts.

**Management**

Pain is the commonest symptom which leads to surgery. Many patients get relief from pain for long periods with anti-spasmodics, NSAIDs and narcotic analgesics.

**Indications for Surgery**

1. Intractable pain.  
2. Pancreatic pseudocysts.  
3. Carcinoma, proven or unproven.  
4. Gastro intestinal bleeding  
5. Pancreatic ascites or pleural effusion.  
6. Biliary or duodenal obstruction.

**Operative Procedures described in TP**

**Drainage Operations**

- Lateral pancreatico jejunostomy (LPJ)  
- Pancreatico gastrostomy (PG)  
- Transduodenal pancreatic sphincteroplasty (TDPS)

**Resections**

- Whipple resection  
- Distal resection (40-95%)  
- Total pancreatectomy

**Denervation Procedures**

- Splanchnicectomy  
- Post coeliac neurectomy

Lateral pancreatico-jejunostomy is the most common operation performed in patients with TP. This allows drainage of the ducts from head to the tail; cysts can also be drained.

**Management of TP in BIRDEM**

125 TP patients were admitted under our care from 1987 to 1999. Number of operations were 114; Male 69 & female 45.

Average age ranged from 12-64 with a mean of 32.

Lateral pancreatico jejunostomy (LPJ) was performed in 94 subjects. Transduodenal sphincteroplasty in 3 in addition to LPJ. Pancreatico gastrostomy in 1. Distal pancreatectomy in 9 subjects. Carcinoma of pancreas was present in 110. Internal drainage of pancreatic cyst with LPJ in 3. LPJ and resection of segment of ileum in association with crohn's in one. LPJ & right hemicolecotomy for carcinoma of caecum in one.

**Non Operative Methods**

Endoscopic pancreatic stenting in TP in 67. Sphincteroplasty and removal of stones in 60.

**Results of Surgery**

Owing to improvement in perioperative and postoperative management of diabetes, mortality rates has been very low in our series -only 1% over a median follow up of about 3 years ( longest follow up of about 10 years ). Pain relief was observed in 75% of cases. Reoperation were required in 3%.: indications included failure to carry the ductotomy well into the head and tail region, persistent head disease, bowel adhesions and chronic duodenal ulcer. Our aim is to perform a wide ductotomy extending from the tail to within 0.5 to 1 cm of the medial border of the duodenum and obtain complete clearance of the main duct. Formal head resection may be necessary in patients with severe head involvement or biliary and duodenal obstruction.
Future Goals

Many aspects of the disease remain to be understood. Aetiology of the disease remains unclear and multiple factors may be responsible. Most patients (90%) have calculi at presentation, it is apparent that a precalculus stage exist. TP is premalignant. The predisposition to cancer may be genetically determined and not dependent upon stones and chronic inflammations.

Future goals in TP should be prevention of the disease by identification of causative factors, Judicious use of non operative and operative methods for the relief of pain, and early identification of carcinoma.

References