DR S N MATHUR ORATION

Surgical Approach in Chronic Pancreatitis

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INTRODUCTION

Chronic pancreatitis (CP) is a progressive, destructive, inflammatory process that lead to total destruction of the pancreas resulting in malabsorption, diabetes mellitus, and severe pain. Histologically, CP is characterized by atrophy and fibrosis of the exocrine tissue with or without chronic inflammation. Scarring of the parenchyma can be focal or patchy initially and may progress to become diffuse. The progressive loss of acinar tissue may lead to exocrine insufficiency and, ultimately, loss of islet tissuewith diabetes.

Patients with chronic pancreatitis can develop various complications, including pancreatic pseudocyst, bile duct or duodenal obstruction, visceral artery pseudoaneurysm, pancreatic ascites and pleural effusions, gastric varices due to thrombosis of the splenic vein, and pancreaticmalignancy.

The treatment of CP is complex; in most cases, an interdisciplinary approach is indicated that includes conservative, endoscopic, and surgical therapy. Recent advances in clinical and translational sciences continue to alter our understanding of chronic pancreatitis (CP) and are forcing changes in the definition, diagnosis, and management approaches.

General Measures

Cessation of Alcohol and Tobacco

Alcohol and smoking cessation in patients with chronic pancreatitis delays the progression of chronic pancreatitis and reduces the likelihood of subsequent pancreatic carcinoma in case of tobacco.

Diet and Supplements

Patients with chronic pancreatitis are advised to consume low-fat meals, small meals, and avoid dehydration. There is no data to support these recommendations but is well tolerated by patients of CP.

Pancreatic Exocrine Enzyme Supplementation

When weight loss and/or steatorrhea (≥15 g/day) develop, supplementation of pancreatic enzymes is indicated. Dyspepsia, diarrhea, meteorism, and malabsorption of proteins and carbohydrates also have been cited as indications. The maingoal is to ensure that optimal amounts of lipase reach the duodenum with the delivered food.

Pain Management

Initial evaluation should include a detailed history to assess for the presence of abdominal pain associated with chronic pancreatitis at baseline, the character of pain (constant or intermittent, usual triggers for pain), severity, and impact on their quality of life. Pain may be treated interventionally or surgically, but medical treatment is generally the first-line therapy in patients with painful CP. Differentmedical treatment options and therapeutic interventions are available, andthese must be integrated into an individualized treatment plan. Every patient requires an individualized type and dose of the analgesic drug, startingwith the lowest dose necessary to control pain.

In patients with pain due to chronic pancreatitis who fail to respond to medical management alone, the subsequent management depends on pancreatic ductal anatomy and the available expertise. Patients should be managed by a multidisciplinary team and should have surgical consultationat this point. In those with a non-dilated pancreatic duct, continued medical therapy is appropriate, with consideration of celiac plexus block. Surgical management in patients with a non-dilated main pancreatic duct (<6 to 7 mm) involves resection of the involved pancreas.

Endoscopic Treatment

Pancreatic ductal obstruction by fibrotic stenoses and/or calculi are the most frequent indications for endoscopic therapy. Interventional treatment modalities aim to decompress and drain the pancreatic ductal system. Endoscopic interventions, such as stone extraction, dilations, or stenting, have to be repeated on a regular basis in almost all patients. As a consequence, patients require frequent hospitalizations.

Available data suggest recommendations concerning endoscopic versus surgical treatment in CP as follows:

- Patients with proximal stenosis, no calcifications, or an inflammatory massmay be treated endoscopically. If two to three repetitive endoscopic treatments fail, the option

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of surgery must be evaluated.

- Surgery is superior to endoscopic treatment in patients with distal duct obstruction, calcifications, or local complications. Patients should undergo surgery early in the course of the disease to prevent further deterioration of exocrine or endocrine function.
- Pancreatic pseudocysts may be treated endoscopically. If endoscopictreatment fails, a surgical drainage procedure is recommended.

Surgical Treatment

The surgical treatment of CP is based on two main concepts:

- Preservation of tissue via drainage aims to protect against further loss of pancreatic function
- Pancreatic resection is performed for non-dilated pancreatic ducts, pancreatic head enlargement, or if a pancreatic carcinoma is suspectedin the setting of CP

Indications for Surgery in Chronic Pancreatitis:

- Intractable pain
- Symptomatic local complications
- Unsuccessful endoscopic management
- Suspicion of malignancy

Drainage Procedures

Like endoscopic therapy, surgical therapy can be directed at improving pancreatic ductal flow. Patients generally require a dilated pancreatic duct,with a size of at least 5 to 6 mm, so the duct can be readily identified atsurgery. The original Puestow procedure and its modification by Partington and Rochelle (1960) proved more successful in patients with CP and a dilated pancreatic duct. The procedure includes resection of tail of the pancreas, followed by a longitudinal incision of the pancreatic duct along the body of pancreas and an anastomosis with a Roux-en-Y loop of jejunum. The modification by Partington and Rochelle abandons the resection of the pancreatic tail.

Pancreatic exocrine and endocrine function are generally unaffected by this procedure as no parenchyma is resected, but these continue to deteriorate as non-surgical patients. Patients with a dilated main pancreatic duct (≥6 to 7 mm) and pain are candidates for a drainage procedure, such as lateral pancreaticojejunostomy (LPJ), or Frey procedure (LPJ with added local head resection to address fibrotic parenchyma that drains poorly and peripancreatic neural damage in the pancreatic head).

In patients with isolated pancreatic pseudocysts, and often in those with a history of a severe episode of acute pancreatitis, a drainage procedure in the form of a cystojejunostomy with Roux-en-Y reconstruction is still the surgical procedure of choice.

Resective Procedures

The vast majority of patients are seen with a ductal obstruction in the pancreatic head, frequently associated with an inflammatory mass. In thesepatients, pancreatic head resection is the procedure of choice.

Partial Pancreatoduodenectomy (PD) or Kausch-Whipple Procedure

In its classic or pylorus-preserving variant, this surgical procedure has been the procedure of choice for pancreatic head resection in CP for manyyears. The most frequent indications for pancreatoduodenectomy in patients with CP and pain are:

- Head of the pancreas is enlarged, often containing cysts andcalcifications
- Previous endoscopic intervention or drainage procedure wasineffective
- Possibility of malignancy in the head of the gland

The pylorus preserving PD may ameliorate the drawbacks of the Kausch-Whipple procedure.

Duodenum-Preserving Pancreatic Head Resection: Beger Procedure

Beger and colleagues introduced the duodenum-preserving pancreatic head resection (DPPHR) as a less radical and organ-sparing procedure designed specifically for patients with CP and an inflammatory mass in the head of the pancreas. The pancreatic head is excavated with the preservation of the duodenum and a layer of pancreatic tissue. Patients whounderwent DPPHR had greater weight gain, a better glucose tolerance, and a higher insulin-secretion capacity. With regard to pain status, DPPHR promotes the transformation of clinically manifest CP into a silent diseasein about 91% of patients.

Duodenum-Preserving Pancreatic Head Resection: Frey Procedure

Frey and colleagues developed a modification of the DPPHR that represents a hybrid technique between the Beger and the Partington- Rochelle procedures. Compared with the Beger procedure, the resection in the pancreatic head in the Frey modification is smaller and is combined with a laterolateral pancreaticojejunostomy to drain the entire pancreatic duct toward the tail. Reconstruction can be performed with a single anastomosis. This procedure appears advantageous in patients with less severe inflammation in the head of the pancreas that is combined with an obstruction in the left-sided pancreatic duct.

Duodenum-Preserving Pancreatic Head Resection: Bern Modification

The Bern modification of the DPPHR represents a technical simplificationof the Beger procedure with equal outcomes. The pancreas is not divided atthe level of the portal vein, decreasing the risk of bleeding. The Bern modification of DPPHR appears ideal for patients with an inflammatory mass and no stenosis in the left-sided duct.

Pancreatic Left Resection in Chronic Pancreatitis

Indications for left pancreatic resection are inflammatory complications, such as pseudocysts and fistulae, and main pancreatic duct stenosis in the tail of the pancreas. Also the suspicion of a left-sided neoplasm may indicate left pancreatic resection. Pancreatic left resection can be performed with and without splenectomy. If no clear indication for splenectomy is present, such as perisplenic pseudocyst or inflammatory or fibrotic encasement of the splenic vessels, preservation of the spleen may be appropriate.

Total Pancreatectomy and Islet Cell Autotransplantation

Total pancreatectomy and islet cell autotransplantation (TP/ICT) has beenproposed in recent years in a subset of patients who suffer from CP in the absence of any demonstrable main duct pathology. The rationale is that byremoving the inciting organ and its inflammation and preventing type 3c diabetes by transplanting the patient's own islet cells into the liver, pain and narcotic dependence can be minimized while also preventing the risk of cancer development. More prospective data are needed to judge the value of this technique in the therapy of CP.

CONCLUSIONS

The adequate therapy of CP is decided according to the patient's symptoms, the disease's stage, and the morphology of pathologic changes of the pancreas. Conservative therapy is the basis of treatment in all patients and must accompany both interventional and surgical therapy. Surgical therapy provides effective long-term pain relief and improvement of quality of life, but it may not stop the decline of endocrine or exocrine pancreatic function. Strategies to improve or maintain endocrine andexocrine function in CP remain an interesting field of research.