

Jejunal Feeding in Chronic Pancreatitis with Severe Necrosis

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ABSTRACT

Context Necrotizing pancreatitis is the most serious form of pancreatic inflammatory disease leading to multiorgan failure and a high (15-20%) mortality rate. The poor nutritional and metabolic conditions and secondary bacterial translocation raise the mortality rate even more.

Objective The aim of the study was to evaluate the effect of jejunal feeding in cases of chronic pancreatitis with extended necrosis.

Patients In our institution, over a five-year period, 86 patients with severe necrotizing pancreatitis were treated for extended necrosis. In 19 patients, chronic calcifying pancreatitis was demonstrated by computed tomography showing more than 20% necrosis in the residual pancreas as well.

Setting In 12 cases, nutrition was provided by jejunal feeding using an endoscopically placed nasojejunal feeding tube, whereas in 7 cases, hypocaloric parenteral nutrition was used.

Design Retrospective unicenter study.

Main outcome measures The rate of healing with conservative treatment.

Results Two of the 12 jejunally fed patients were operated on because of complications of pancreatitis. Five patients required intervention

in the hypocaloric parenteral nutrition group: 4 were operated on and one more needed endoscopic intervention. The healing rate was significantly higher ($P=0.045$) in the jejunal feeding group (83.3%) than in the parenteral nutrition (28.6%) patients.

Conclusions In cases of chronic calcifying pancreatitis serious necrosis can develop in the residual pancreas resulting in a severe acute pancreatitis-like disease. A better healing rate was achieved and less interventions became necessary using nasojejunal tube feeding than in the parenteral nutrition group and this was analogous to what was observed in severe necrotizing pancreatitis. This form of pancreatitis has not yet been described in the literature in detail. The authors suggest that it be regarded as a separate entity.

INTRODUCTION

The Revised Classification of Pancreatitis, formulated in Marseilles in 1984 [1], distinguished between different forms of acute and chronic pancreatitis. Based on the predominating structural features, the following descriptive terms were used for chronic calcifying pancreatitis:

- Chronic pancreatitis with focal necrosis;
- Chronic pancreatitis with segmental or diffuse fibrosis;
- Chronic pancreatitis with or without calculus.

A distinct morphologic form of chronic pancreatitis was obstructive chronic pancreatitis. Neither the two Marseilles classifications nor the newer classifications indicated that extended necrosis can occur in chronic calcifying pancreatitis [2] which resembles severe acute necrotizing pancreatitis in many respects such as the extension of the necrosis, the duration of the hospital stay and the artificial nutrition necessary and complications needing surgery or interventional treatment. According to our experiences obtained with a large number of patients having necrotizing pancreatitis, extended necrosis of the pancreas in chronic calcifying pancreatitis is not unusual. The aim of the study was to evaluate the effect of jejunal feeding in cases of chronic pancreatitis with extended necrosis.

METHODS

Patients

In a five-year period, 86 patients with severe necrotizing pancreatitis were treated for necrosis of the pancreas. There were 57 males and 29 females (mean age: 50.2 years; range 27-67).

In 19 patients (22.1%), chronic calcifying pancreatitis was demonstrated by the morphology and/or functional examination of the exocrine pancreas. Contrast enhanced CT scan scoring was the general characteristic used

to diagnose extended necrosis, resulting in at least 20–30% necrosis in the pancreas and its surrounding area. In 10 patients acute fluid collections (acute cysts) developed in the area adjacent to the pancreas. The inflammation markers were not able to be fully evaluated due to the nature of retrospectivity.

Design

The patients were retrospectively analyzed for morbidity and mortality. The rate of healing with conservative treatment was considered as main outcome measure.

Nutritional Treatment

In 12 cases, nutrition was provided by jejunal feeding using an endoscopically placed nasojejunal feeding tube [3] whereas, in 7 patients, hypocaloric total parenteral nutrition was used for feeding. Criteria for the selection of enteral vs. parenteral nutrition depended on the sequence of hospitalization and medical capability. The characteristics of these patients in each nutrition category are reported in Table 1. No significant differences were observed between the two groups.

Jejunal Feeding

Using a large working channel duodenoscope a 10-12 F feeding tube was placed into the

Table 1. Comparison of the characteristics in the jejunal feeding group as compared to that of the parenteral nutrition group in 19 patients with chronic pancreatitis with severe necrosis. (Frequencies or mean values and range).

	Jejunal feeding (n=12)	Parenteral nutrition (n=7)	P value
Gender			0.117 ^a
Males	11 (91.7%)	4 (57.1%)	
Females	1 (8.3%)	3 (42.9%)	
Age (years)	43.5 (27-56)	44.1 (33-62)	0.899 ^b
CT score	28.3 (20-35)	26.6 (20-35)	0.450 ^b
Feeding duration (days)	16.7 (13-22)	19.3 (13-25)	0.217 ^b

^a Fisher's exact test

^b Mann-Whitnev test

Table 2. Comparison of the outcome in the jejunal feeding group as compared to that of the parenteral nutrition group in 19 patients with chronic pancreatitis with severe acute necrosis.

	Jejunal feeding (n=12)	Parenteral nutrition (n=7)
Healed with conservative treatment	10 (83.3%)	2 (28.6%)
Interventions	2 (16.7%)	5 (71.4%)
Surgery	2	4
Operative endoscopy	0	1
Mortality	0	0

P=0.045 (Fisher's exact test)

second loop of jejunum using the Seldinger technique which we developed [4]. The tube was inserted into one of the nostrils and fitted with a bandage. On the first day, normal saline was perfused continuously into the jejunum; then, from the second day, a polymeric standard composition nutrient was perfused in a progressively increasing concentration at a rate of 1 mL/min. With this method about 2,000 kcal and 2,300 mL of fluid, basic nutrients, vitamins and trace elements were given to the patients without stimulating the pancreas. Nutrison Standard® and Peptison® (Nutricia, Budapest, Hungary) were used for jejunal feeding.

Parenteral Nutrition

The composition formula used for parenteral nutrition was: lipidemulsion: 0.0125 g/kg/h; aminoacid: 0.015 g/kg/h; glucose: 0.2 g/kg/h.

ETHICS

This is a retrospective study and data were collected by the usual methods used in clinical practice.

STATISTICS

Data are reported as mean values and ranges. The Mann-Whitney and the Fisher's exact tests

were used. Statistical analysis was carried out by means of the SPSS/PC+ package [5]. Two-tailed P values less than 0.05 were considered statistically significant.

RESULTS

The outcome of the 19 patients having chronic pancreatitis with severe necrosis is reported in Table 2. Ten patients of the jejunal group recovered without operation or endoscopy and only 2 were operated on due to complications of pancreatitis. In the parenteral group, 4 patients were operated on and one needed endoscopic intervention. The healing rate was significantly higher (P=0.045) in the jejunal nutrition group and fewer operations were necessary in these patients (16.7%) than in the parenteral group (71.4%).

In addition, no significant (P=0.571) difference between the jejunal and the parenteral groups was detected with respect to the number of operations needed in the case of acute pseudocysts (Table 3).

DISCUSSION

Acute pancreatic necrosis has been reported in 11-12% of patients having chronic pancreatitis who underwent surgical therapy shortly after an acute attack [6]. No studies have been done regarding conservative treatment of extended pancreatic necrosis in chronic calcifying

Table 3. Comparison of the healing rate in the jejunal feeding group as compared to that of the parenteral nutrition group in 10 patients with chronic calcifying pancreatitis and acute fluid collection..

	Jejunal feeding (n=4)	Parenteral nutrition (n=6)
Healed with conservative treatment	3 (75.0%)	3 (50.0%)
Interventions	1 (25.0%)	3 (50.0%)
Surgery	0	2
Operative endoscopy	1	1

P=0.571 (Fisher's exact test)

pancreatitis. We treated our cases mainly by jejunal feeding as is done with patients having severe acute necrotizing pancreatitis. In comparison to the patients treated with total parenteral nutrition, the healing rate of the jejunal group was significantly better.

It has previously been shown that the most important cause of mortality and morbidity in acute pancreatitis is the development of pancreatic and retroperitoneal infection [7]. Total parenteral nutrition was shown to enhance bacterial translocation through the atrophied bowel wall [8]. Jejunal feeding seems to maintain the physiologic motility of the gut [9], prevent atrophy of the villi, increase mesenteric circulation and allow the pancreas to rest [10, 11, 12]. The slow, continuous infusion of nutrients did not interrupt the volume and bicarbonate changes characterizing the interdigestive phases, and the postprandial peak and integrated secretions were the same as during basal secretion [13, 14]. The slowly administered jejunal diet does not stimulate pancreatic secretion; furthermore, it does not interrupt the characteristic cyclic changes of the basal secretion allowing the pancreas to rest, similar to what occurs during fasting, and avoiding the harmful metabolic, circulatory and motility effects of starvation. It has been demonstrated that in all illnesses and states where the increase of the pancreatic exocrine function is not desirable, continuously administered jejunal feeding can be safely used.

Conclusion

In cases of chronic calcifying pancreatitis, serious necrosis can develop in the residual pancreas resulting in an acute pancreatitis-like disease [15]. Using nasojejunal tube feeding a better healing rate was achieved and less endoscopic interventions or surgery were carried out than in the parenteral nutrition group. Duration of the nutrition and the hospital stay were shorter [16, 17]. From an economic point of view, jejunal feeding was better than

parenteral nutrition. This form of pancreatitis has not yet been described in the literature; therefore, it should be registered as a new entity.

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