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Pretreatment of gastric outlet obstruction with pancrelipase: Report of a case

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ABSTRACT

INTRODUCTION: Gastric outlet obstruction is characterized by the retention of gastric contents. Removal of gastric contents is an important part of the treatment strategy. The use of a nasogastric tube alone can result in inadequate removal of gastric contents. We treated a patient with advanced gastric cancer and gastric outlet obstruction with pancrelipase to aid in the removal of gastric contents.
PRESENTATION OF CASE: The patient is an 81-year-old man with a Type 3 gastric cancer nearly circumferentially involving the antrum, resulting in gastric outlet obstruction. A nasogastric tube was placed for four days, but drainage of gastric contents was inadequate. Pancrelipase was then given orally for four days, and gastric contents were evacuated. The patient underwent distal gastrectomy with Roux-en-Y reconstruction and was discharged from the hospital on postoperative day 14.
DISCUSSION: This report suggests that pancrelipase may be beneficial in the treatment of patients with gastric outlet obstruction.
CONCLUSION: Pancrelipase allowed gastric contents to be evacuated in a short period of time in a patient with gastric outlet obstruction.
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1. Background

Gastric outlet obstruction is common in patients with advanced gastric cancer, duodenal cancer, gallbladder cancer, cholangiocarcinoma, and pancreatic cancer. Gastric outlet obstruction is usually treated by gastrectomy, bypass, or stent placement to allow oral intake [1–4]. Since patients with gastric outlet obstruction have retention of gastric contents, a nasogastric tube is often used to remove the residual material [5]. However, undigested food can be difficult to remove with a nasogastric tube alone, and large volumes of material often remain in the stomach.

We treated a patient with gastric cancer and resulting gastric outlet obstruction with pancrelipase. The gastric contents were then readily removed. To our knowledge, the use of pancrelipase in patients with pyloric obstruction has not been reported previously, and this may be of use in the care of such patients.

2. Case presentation

The patient is an 81-year-old man who presented with a history of decreased oral intake, but did not report vomiting. Difficulty in oral intake persisted for seven months, and the patient was aware of having lost four kg of weight. The patient had a 20-year history of hypertension. Upper gastrointestinal endoscopy revealed gastric cancer, and the patient was referred for further treatment. Computed tomography showed marked retention of gastric contents (502 mL on volumetric measurement) (Fig. 1), and thickening of the pyloric region. The peri-gastric fat was fuzzy, suggesting tumor invasion beyond the serosa. Lymph nodes at stations 12a and 8a were enlarged.

A 16-French nasogastric tube was inserted, and gastric contents were aspirated. The drainage volume from the nasogastric tube was 1080 and 600 ml on the first two hospital days. On the second hospital day, upper gastrointestinal endoscopy was performed (Fig.2). The stomach still contained a large amount of undigested food. A Type 3 semi-circumferential tumor involving the anterior wall from the antrum to the pylorus was present. There was a tight stenotic area, but an endoscope could be passed through the site. Clinical stage IIIB, T4a(SE)N2M0 gastric cancer was diagnosed (according

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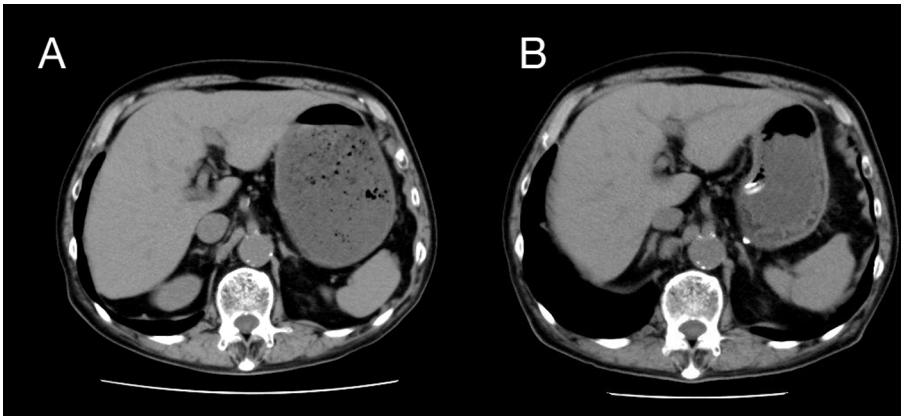

Fig. 1. (A) A computed tomographic scan showing the retention of a large volume of gastric contents on the first hospital day (502 mL). (B) On the fourth hospital day, the volume of gastric contents had decreased, but a large volume of food debris remained (156 mL).

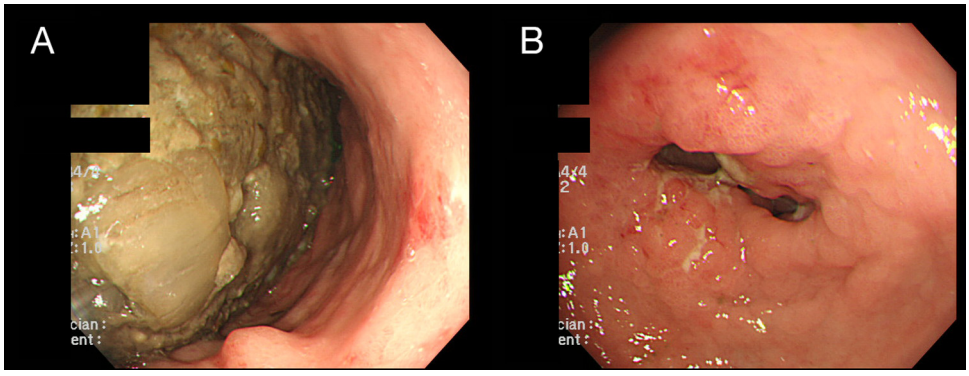

Fig. 2. (A) An endoscopic image showing the retention of a large volume of food debris in the stomach. Aspiration was difficult . (B) A semi-circumferential tumor arising mainly in the anterior wall of the antrum.

to the 14th edition of the Japanese Classification of Gastric Cancer) [6], and distal gastrectomy was planned.

Gastric aspiration was continued using the nasogastric tube. Computed tomography scan on the fourth hospital day revealed a large residual volume of gastric contents (156 mL). Therefore, pancrelipase was given orally in a daily dose of 1800 mg in three divided doses per day. After each dose of pancrelipase, the nasogastric tube was clamped for four hours and then released to aspirate the gastric contents. Since pancrelipase is an enteric-coated preparation, a proton pump inhibitor, lansoprazole, was also administered to maintain a neutral intra-gastric pH. The patient was fully informed that it was unclear whether pancrelipase would be effective, and written informed consent was obtained. There were no adverse reactions related to treatment with pancrelipase. The drainage volume from nasogastric tube during administration of pancrelipase was 450, 250 and 115 ml, each day. On the eighth hospital day, surgery was performed. Intraoperative examination showed peritoneal dissemination of tumor, and stage IV cancer sT4a(SE) NxM1(P1) was diagnosed. Due to the history of decreased oral intake, a palliative distal gastrectomy was performed with a Roux-en-Y reconstruction. Macroscopic residual tumor (R2) was present. The operative time was 3 h. 25 min., with an estimated blood loss of 100 mL.

A type 3 cancer involving four fifths of the circumference of the anterior wall of the lesser curvature of the antrum (Fig. 3) was found. The remainder of the gastric body was nearly normal, with no edematous changes. Only one remaining fruit seed was found in the stomach, with no other residual food particles. The postoperative course was unremarkable, and oral intake resumed. The patient was discharged from the hospital on the 14th postoperative day and is scheduled to receive chemotherapy.

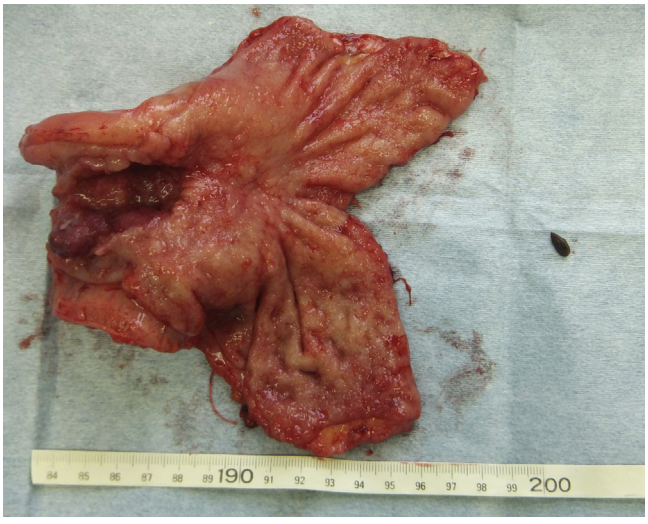

Fig. 3. Histopathological specimens obtained by distal gastrectomy, showing advanced gastric cancer arising in the anterior wall of the antrum. Only one seed of fruit remained in the stomach.
Gunma

3. Discussion

In this patient, treatment with pancrelipase promoted dissolution of gastric contents, allowing the contents to be nearly completely aspirated. This suggests that pancrelipase may be useful in patients with gastric outlet obstruction to facilitate preoperative removal of retained material in an obstructed stomach.

In patients with gastric outlet obstruction, only gastric juice promotes digestion of gastric contents. The lipase and pepsin in gastric juice enables the breakdown of proteins and lipids [7]. In the presence of gastric outlet obstruction, however, large amounts of food debris are frequently retained and are difficult to remove with a nasogastric tube alone. In contrast, in patients with small bowel obstruction, gastric contents can be removed with a nasogastric tube [8]. The difference between gastric outlet obstruction and small bowel obstruction is exposure to pancreatic enzymes. Pancreatic enzymes are thought to have an important role in the digestion of food debris in the stomach. In patients with pancreatic exocrine dysfunction, digestive function can be improved by supplementation with pancreatic enzymes [9,10]. In the present patient, the administration of pancrelipase promoted the digestion of food debris inadequately digested by gastric juice alone, thereby allowing removal of gastric contents.

Surgery for gastric outlet obstruction has been reported to be associated with not only major complications but also minor complications [11]. Residual material in the stomach obstructs the operative field and may contribute to the development of complications. Since endoscopic treatment is associated with an increased risk of aspiration pneumonia, it is important to decrease the volume of gastric contents before treatment. In this patient, the gastric contents were nearly completely removed, contributing to a good postoperative course.

Pancrelipase is as an enteric-coated preparation, because the active ingredient is released at pH 5.5 [12]. After intragastric administration in patients with gastric outlet obstruction, pancrelipase may not be adequately activated at the low pH caused by gastric juice. The concurrent use of a proton pump inhibitor resulted in the maintenance of a high intra-gastric pH, potentially resulting in the good response to pancrelipase.

Larger studies, including randomized, placebo-controlled clinical trials, are needed to confirm the effectiveness of pancrelipase in patients with gastric outlet obstruction. This experience suggests that pancrelipase may be effective as preoperative preparation in these patients. Future studies are needed to investigate whether pancrelipase is useful to facilitate the removal of gastric contents.

4. Conclusions

The use of pancrelipase allowed gastric contents to be successfully removed in a short period of time in a patient with gastric outlet obstruction. Pancrelipase might be useful as a pretreatment in patients with gastric outlet obstruction.

Conflict of interest

We have no conflicts of interest to declare.

Funding

We declare that we have no sources of funding.

Ethical approval

Documented informed consent was obtained from patient.

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