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Competing Interest

None to declare

Abstract

Percutaneous endoscopic jejunostomy (PEJ) has been developed and is considered to be a better method than percutaneous endoscopic gastrostomy for preventing the occurrence of aspiration pneumonia. However, the incidence of other complications associated with this procedure is less clear. We herein report a rare case with a small intestinal intussusception due to a PEJ placement. In this case, a radiologic examination with gastrografin was useful to detect the typical findings of a small intestinal intussusception, a beak-like filling defect, and identify the location of the lesion. An endoscopic examination that was carefully performed with a thin scope was effective to observe the ischemic change of the small intestine and immediately determine the indication for surgical treatment. This case highlights the necessity to carefully manage patients with a PEJ placement, considering the risk of small intestinal intussusceptions when the patient complains of symptoms that are suspicious for an intestinal obstruction.

Introduction

Artificial enteral nutrition has arisen as a major concern in clinical situations and home care because of the increase in both the elderly population and in patients with head and neck and esophageal disorders (1). Percutaneous endoscopic gastrostomy (PEG) has become a popular procedure for establishing enteral feeding, although the procedure does have some possible complications including reflux esophagitis and aspiration pneumonia (2). Percutaneous endoscopic jejunostomy (PEJ) has subsequently been developed and is considered to be a better method than PEG for preventing aspiration pneumonia because the PEJ tube is placed at a more distal area through the stomach. While PEJ contributes to a decreased risk of refractory pneumonia due to the aspiration, the incidence of other complications in this procedure is less clear (3, 4). The present case report describes an unusual case of small intestinal intussusception caused by a PEJ tube placement.

Case

An 84-year-old male with a 20-year history of chronic obstructive pulmonary disease visited our hospital due to dyspnea and dysphagia in December 2009. Because of the complaints of severe dysphagia and malnutrition, a PEJ was performed for enteral

feeding. Sixty-five days after the insertion of PEJ, the patient complained of nausea, vomiting, and abdominal distention. A radiological examination with the injection of 50% gastrografin from the PEJ tube detected beak-like filling defect (**Figure 1**). Ultrasonography (**Figure 2**) revealed a target sign in the corresponding site of the small intestine. Taken together, the observations led to a diagnosis of a small intestinal intussusception caused by the PEJ tube placement. To determine if surgery was needed to cure the small intestinal intussusceptions, an endoscopic examination using a thin scope (XP260N, Olympus Medical Systems, Tokyo, Japan) was carefully performed through the fistula beside the PEJ tube after obtaining a written informed consent. The disappearance of the vascular networks and mucosa discolored as dark red or grey were observed (**Figure 3**), thus suggesting that ischemic changes had occurred in this area of the small intestine. Surgery was immediately performed. The intra-operative findings showed that the dark red jejunum was dilated and invaginated (**Figure 4**). A 2 m section of the jejunum was removed and a histological examination showed severe ischemic change in the small intestine.

Discussion

This report presents a rare case of small intestinal intussusception due to a PEJ tube

placement, which required a jejunectomy to treat the severe ischemic change in the small intestine. While the common complications of PEJ includes pain, bleeding and cutaneous ulceration at the insertion site, peristomal leak and infection, tube extrusion, and aspiration pneumonia (2–4), only one case with the small intestinal intussusceptions and incomplete intestinal obstruction caused by a placement of PEJ tube has been described to date (5). This previously reported case was cured with conservative treatment because a severe obstruction or ischemic change in the small intestine was not evident. The present case provides an alert that small intestinal intussusceptions due to PEJ may have the potential to cause a severe ischemic change of the small intestine. Patients with a PEJ placement have to be carefully managed when they complain of symptoms that are suspicious for an intestinal obstruction.

In the current case, radiological examination with the injection of 50% gastrografin from the PEJ tube was useful to detect the typical finding of the intussusceptions, beak-like filling defect, and to identify the lesion's location, and subsequent endoscopic examination with a thin scope was effective to diagnose the ischemic change of the small intestine and determine the indication of surgical operation. Consequently, a jejunectomy was immediately performed and the intussusceptions and ischemic change of the small intestine were relieved. It should be important to immediately grasp the

condition of the small intestine by radiologic and endoscopic examinations when a patient complains of abdominal symptoms such as distention, nausea, and vomiting.

In summary, a rare case with a small intestinal intussusception due to the placement of a PEJ tube is reported. A radiologic examination with gastrografin was useful to detect the typical finding of the small intestinal intussusception, beak-like filling defect, and identify the location of the lesion. Endoscopic examination that was carefully performed with a thin scope was effective to observe the ischemic change of the small intestine and immediately determine the indication for surgical treatment. Therefore, it is important to carefully manage patients with a PEJ placement under considering a risk of the small intestinal intussusceptions when the patient complains of symptoms that are suspicious for an intestinal obstruction.

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Figure legends

Figure 1. Results of the radiologic examination.

Radiologic examination with 50% of gastrografin revealed a beak-like filling defect in the proximal jejunum (▲), thus suggesting a small intestinal intussusception due to the placement of the PEJ tube (←). A part of the normal jejunum anally located from the intussusception can be identified by the long arrow (↔).

Figure 2. Results of the ultrasonographic image.

Typical target sign suggestive of a small intestinal intussusceptions was apparent in the middle area of the abdomen.

Figure 3. Endoscopic image of the intussusception site.

An endoscopic examination, which was carefully performed through the fistula beside the PEJ tube, detected the disappearance of the vascular networks and mucosa that was discolored dark red or grey. These observations indicated severe ischemic change in the small intestine.

Figure 4. Intra-operative findings of the small intestine.

An intestinal intussusception due to the PEJ tube and a 2 m portion of the dark red jejunum was observed, suggesting intestinal damages due to severe ischemic change

throughout almost the entire jejunum.