Identifying small bowel intussusception related to a gastroenteric feeding tube

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Enteral feedings through gastroenteric (GE) tubes are commonly utilised in patients with feeding difficulties and intolerance to gastric feeding. A variety of complications related to GE tubes have been described which rarely include small bowel intussusception. The case of a 23-year-old man with proximal small bowel intussusception related to an endoscopically placed low profile GE tube is described. The patient presented with abdominal pain and bilious vomiting. Symptoms resolved with tube shortening. This report includes a short review aimed at raising awareness about this complication with a discussion on diagnosis and management.

Introduction

Enteral feedings through gastroenteric (GE) tubes are commonly used in patients with feeding difficulties and intolerance to gastric feeding as a result of poor stomach emptying or gastro-oesophageal reflux. Complications related to GE tubes have been described and include tube migration/displacement, perforation, blockage, breakage, leakage and, rarely, small bowel intussusception and obstruction. We present a case of a proximal small bowel intussusception related to a GE tube and we review the available literature. This report aims to raise awareness about this complication and discusses appropriate management.

Case report

A 23-year-old man with spastic quadriplegia, mental retardation and severe gastro-oesophageal reflux, maintained on jejunal drip feeds for about 2 years through a GE tube, presented with abdominal pain and bilious vomiting. His low profile, 16 French, 3 cm MIC-KEY GE tube (Kimberly-Clark Inc, Roswell, Georgia, USA) (figure 1) was last replaced by endoscopy and fluoroscopy 3 months previously, with the tube tip positioned at the level of the ligament of Treitz. He presented with several days of worsening abdominal pain accompanied by feeding

intolerance with nausea and bilious vomiting. Bowel movements were looser than normal but frequency of defecation was unchanged.

On physical examination his abdomen was soft and non-distended but diffusely tender with no palpable masses. His laboratory evaluation included a normal complete blood count, amylase and lipase but an elevated C reactive protein of 20 mg/dl (normal <0.5). Stool *Clostridium difficile* toxin assay was positive and therefore metronidazole was started enterally. Abdominal x-ray revealed a GE tube in place with a non-obstructed bowel gas pattern and air filled loops of bowel. An abdominal and pelvic CT scan showed two areas of intussusception spanning from the descending portion of the duodenum to the proximal jejunum (figure 2). The GE tubing was visualised within the intussusception. He was hospitalised and underwent endoscopic evaluation. The intussusception was not seen endoscopically after removing the GE feeding tube. The GE feeding tube was replaced with a new one but pain recurred with initiation of enteral feeds. Because of concern that mucosal irritation induced by the tip of the tube pushing against the same region of the duodenum with subsequent intermittent intussusception, the GE tube was then shortened, with the tube tip positioned more proximally, at the level of the second portion of the duodenum. The patient subsequently tolerated enteral feeds well, was discharged and continues to do well after 8 months of follow-up.

Discussion

GE tubes were introduced as a method to circumvent problems in patients with feeding intolerance and significant gastro-oesophageal reflux as an alternative to antireflux surgery. Such patients include those with severe physical and neurological impairment who are at greater risk of surgical and anaesthetic complications.¹ However, use of such tubes is associated

Figure 1 A sample of the low profile MIC-KEY gastroenteric feeding tube described in this report.

Figure 2 Abdominal CT scan image showing a cross view of the intussusception involving the duodenum and proximal jejunum forming a target sign with the gastrojejunostomy tube in the centre.

with potential complications, including proximal small bowel intussusception.

Cases of GE tube related intussusception have been reported in as many as 16–20% of children in some series.^{2,3} These series describe individuals with this complication as mostly younger male patients. This may occur days to a few years after initial tube placement. Most patients present with bilious emesis or abdominal pain but some may be asymptomatic and are discovered incidentally.² One case of a GE tube related intussusception that led to necrosis and significant bowel resection has been described.⁴ The diagnosis can be made reliably by ultrasound in the hands of a skilled sonographer or by fluoroscopy. In our case, the patient had worsening abdominal pain with significant tenderness on examination, so an

abdominal and pelvic CT scan was performed to look for causes of an acute abdomen, leading to the diagnosis of intussusception. Management includes close monitoring after shortening of the GE tube, removal of the GE tube and replacement with a gastrostomy tube, and rarely reduction of the intussusception by flushing the tube with air and saline.² In our case, the intussusception must have been temporarily reduced when the tube was removed or as the result of air insufflation during endoscopy, as it was not seen endoscopically. Shortening the tube, with the tip positioned in the second portion of the duodenum instead of near the ligament of Treitz, successfully relieved his symptoms and prevented recurrence of the intussusception.

Currently, there is no published literature correlating the risk of intussusception with the position of the GE tube tip, or the specific characteristics of the tube diameter, design, materials or placement methods. Theoretically, a tube tip that tents the bowel or otherwise impinges on the mucosa could cause mucosal irritation or create a fold that could act as a lead point for intussusception. Our case is the first report of an endoscopically placed low profile GE tube leading to small bowel intussusception.

Clinicians, in particular paediatricians and emergency room physicians, are experienced in dealing with classic ileocolonic intussusceptions, but awareness is needed to recognise and manage proximal small bowel intussusceptions caused by GE feeding tubes. Affected patients are often neurologically impaired, and may not be able to describe their symptoms. Vomiting, especially if bilious, should raise concern for this potential complication. If missed, this may lead to bowel necrosis and possibly death.

Competing interests None.

Patient consent Obtained.

Ethics approval Approval from the institutional review board at the University of Iowa to study patients with feeding tubes was obtained.

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