CASE REPORT

Percutaneous enterogastric tube dislodgement in tetraplegics

MJ Hess and DK Foo

Spinal Cord Injury Service, VA Boston Health Care System, West Roxbury, MA, USA

Study design: Case reports describing abdominal complications following percutaneous enteral gastric (PEG) tube placement in three tetraplegics.

Objectives: The aim was to increase provider awareness of PEG tube dislodgement as a complication in tetraplegics.

Setting: Spinal cord injury center, Veteran's Administration hospital.

Methods: The charts of three spinal cord injured veterans with tetraplegia were reviewed for clinical presentation and radiographic findings supporting the diagnosis of acute abdominal complications following PEG tube dislodgement.

Results: PEG tube dislodgement in tetraplegics can present with occult findings and lead to disastrous outcomes if the diagnosis is delayed.

Conclusion: PEG tube dislodgement should be considered in tetraplegics who develop even subtle abdominal complaints, especially if the injury is complete. Further assessment with computed tomography (CT) scans or fistulograms should be considered to help with decision making. *Spinal Cord* (2010) **48**, 83–84; doi:10.1038/sc.2009.66; published online 30 June 2009

Keywords: enteral feeding; spinal cord injury; acute abdomen; treatment complications

Introduction

Percutaneous enteral feeding is a common practice used to support nutritionally compromised individuals with feeding difficulties. Patients with spinal cord injury (SCI) are more likely to require enteral feeding because of high rates of ventilator dependence, negative nitrogen balance and dysphagia.

Mechanical problems associated with percutaneous enteral gastric (PEG) tube placement include tube dislodgement and malposition. As spinal cord injuries result in impaired sensation below the level of injury, such problems may be less clinically apparent. We present three individuals with tetraplegia whose diagnosis of abdominal complications following push-type PEG tube (re-) placement was delayed because of poorly localizing signs and radiographic studies.

Cases

Patient AB is an 82-year-old male with a C3 American Spinal Injury Association (ASIA) C SCI and multiple cerebral vascular accidents who received nutritional support through a PEG tube. The patient underwent a routine, uneventful enteral feeding tube replacement after which he started moaning, became tachycardic and hypertensive. His abdomen was distended, tender and rigid with no bowel sounds. Radiographically, there was no evidence of free air with gas in the rectum. The patient was treated supportively with intravenous fluids, analgesics and nasogastric decompression for presumed ileus. Within the following 15 h, the patient developed cardiopulmonary collapse and the family opted for non-heroic measures. Autopsy showed a hematoma around the PEG tube site with a fibrinopurulent collection within the peritoneum although no overt perforation was identified.

Patient CD is a 71-year-old male with C6 ASIA A SCI who underwent an elective percutaneous gastrostomy tube placement for failure to thrive and prolonged intubation. At 6 weeks after PEG tube placement, the tube became insecure and was replaced uneventfully. After positioning was verified with auscultation, tube feeding was reinstituted but leakage and bleeding around the tube site were noted. The patient had no abdominal pain and the abdominal examination was normal. A fistulogram showed extraluminal placement of the G-tube tip with extravasation of dye into the abdomen. The gastrosotomy tube was removed and the patient was started on total parenteral nutrition. He was treated with a 2-week course of intravenous levofloxacin and vancomycin for peritonitis and recovered fully. Parenteral feeding was stopped 3 weeks later after another PEG tube was successfully placed.

np

Correspondence: Dr MJ Hess, Spinal Cord Injury Service, VA Boston Health Care, 1400 VFW Parkway, West Roxbury, MA 02132, USA. E-mail: marika.hess@va.gov

Received 16 January 2009; revised 9 April 2009; accepted 3 May 2009; published online 30 June 2009

Patient EF is a 44-year-old male with C2 ASIA A SCI who underwent an elective percutaneous gastrostomy tube placement for prolonged respiratory failure. At 3 months after placement, he developed sepsis and was treated supportively. Two days later, the patient complained of new abdominal pain and was evaluated with an X-ray that showed gas in the colon and rectum, and no free air. The patient's abdominal examination remained normal, except for distention, and he continued to have bowel movements. The patient was treated with gastric decompression for presumptive small bowel obstruction and ileus, and subsequently experienced improved pain and with less distention radiologically. A CT scan performed 4 days after pain onset showed a displaced G-tube associated with a subcutaneous abdominal fluid collection. Despite drainage of the abdominal wall the patient suffered clinical deterioration resulting in death.

Discussion

To our knowledge, no one has previously reported acute abdominal complications in the spinal cord injured population due to PEG misplacement. In the able-bodied population the complication rate associated with PEG placement was 2.5–16% with a mortality rate of 1–2.5%.^{1–3} Even though a similar complication rate of 17.5% was found in the neurologically impaired population, endoscopic gastrostomy is felt to be a safe, effective and practical method of chronic enteral alimentation in the neurologically impaired.⁴ We report on three patients who developed complications related to gastrostomy tube placement: one patient suffered microscopic perforation after a routine change; the other two developed gastric tube dislodgement. We found that neither clinical findings nor abdominal X-rays were helpful in diagnosing PEG tube malposition.

Two patients had abdominal distention and abdominal pain. The individual with an incomplete SCI (AB) with preserved sensation below the level of injury developed localizing signs though an abdominal X-ray failed to show abdominal free air and a perforation was not grossly evident on autopsy. A similar scenario was reported in a neurologically impaired boy in whom neither contrast study nor CT scan revealed an intra-abdominal pathology.⁵ Plain radiographs detect pneumoperitoneum in only 55–85% of patients with organ perforation, and this number may be even less in individuals who cannot be positioned appropriately because of their weakness, musculoskeletal deformities and spasticity.⁶

The lack of classical signs of acute abdominal pathology in the spinal cord injured individuals is well described.⁷ The most important signs in this population are autonomic dysreflexia, referred shoulder pain, abdominal pain, abdominal distention and increased spasticity.¹⁰ Abdominal distention is a nonspecific finding that is common after SCI and abdominal pain is usually dull and poorly localized. These cases highlight the need to consider PEG tube dislodgement in tetraplegic patient who develop even subtle abdominal complaints, especially if the injury is complete. Patients and their caregivers need to be counseled about these complications and their occult nature before tube placement. Further assessment with either CT scans or fistulograms should be performed liberally early in the patient's course, but surgical exploration may be needed if the index of suspicion remains high. Once tube placement is verified, securing it with an external anchor may reduce movement.

References

- 1 Kohli H, Bloch R. Percutaneous endoscopic gastrostomy: a community hospital experience. *Am Surg* 1995; **61**: 191–194.
- 2 Larson DE, Burton DD, Schroeder KW, DiMagno EP. Percutaneous endoscopic gastrostomy. Indications, success, complications, and mortality in 314 consecutive patients. *Gastroenterology* 1987; 93: 48–52.
- 3 Llaneza PP, Menendez AM, Roberts R, Dunn GD. Percutaneous endoscopic gastrostomy: clinical experience and follow-up. *South Med J* 1988; **81**: 321–324.
- 4 Glaesener JJ, Fredebohm M. Percutaneous endoscopic gastrostomy in the rehabilitation of neurological disorders. *Schweiz Med Wochenschr* 1992; **122**: 1600–1605.
- 5 Stylianides NA, Date RS, Pursnani KG, Ward JB. Jejunal perforation caused by a feeding jejunostomy tube: a case report. *J Med Case Reports* 2008; **2**: 224.
- 6 Levine MS, Scheiner JD, Rubesin SE, Laufer I, Herlinger H. Diagnosis of pneumoperitoneum on supine abdominal radiographs. *AJR Am J Roentgenol* 1991; **156**: 731–735.
- 7 Lee BY, Dasilva MC, Ostrander LE, Bond W. Acute abdomen in spinal cord injured patients. In: Lee BY, Ostrander LE (eds). *The Spinal Cord Injured Patient*, 2nd edn. Demos Medical Publishing: New York, 2002, pp 148–156.
- 8 Neumayer LA, Bull DA, Mohr JD, Putnam CW. The acutely affected abdomen in paraplegic spinal cord injury patients. *Ann Surg* 1990; **212**: 561–566.
- 9 Miller LS, Staas Jr WE, Herbison GJ. Abdominal problems in patients with spinal cord lesions. *Arch Phys Med Rehabil* 1975; 56: 405–408.
- 10 Bar-On Z, Ohry A. The acute abdomen in spinal cord injury individuals. *Paraplegia* 1995; 33: 704–706.

8/