Intramural Rupture of the Esophagus: A Rare Complication Associated with Nasobiliary Catheter Placement

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Intramural rupture of the esophagus developed after short-term nasobiliary catheter placement in an 87-year-old female with choledocholithiasis and suppurative cholangitis. Endoscopy revealed bleeding accompanied by circumferential disruption of the mucosa along the lower third of the esophagus. Withdrawal of the catheter and conservative treatment resulted in recovery of the lesion and relief of symptoms. This rare complication should be kept in mind during the placement of nasobiliary catheter.

(Key words: upper gastrointestinal bleeding, interventional procedure, mucosal injury

Introduction

The nasobiliary catheter is an established device for temporary or short-term biliary decompression. Although some minor problems including nasal irritation, sore throat, or abdominal discomfort are associated with the nasobiliary catheter placement, most serious complications are directly related to endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic sphincterotomy (EST).

We report a case of intramural rupture of the esophagus manifested as a rare complication of the nasobiliary catheter placement. This complication has not been reported so far.

Case Report

An 87-year-old female presented with a 2-day history of fever and abdominal pain. On physical examination, the conjunctiva was slightly icteric and the upper abdomen was tender on palpation. Ultrasonography demonstrated dilated bile ducts. Laboratory tests were as follows: WBC; 10,000/μl, RBC; 355 × 10^6/μl, Hb; 10.1 g/dl, Ht; 31.6%, platelet; 31.3 × 10^4/cμm, CRP; 17 mg/dl, AST; 124 U/l, ALT; 63 U/l, ALP; 1,022 U/l (normal range, 87–254), t-Bil; 7.7 mg/dl, d-Bil; 4.2 mg/dl, LDH; 290 U/l, γ-GTP; 77 U/l, total protein 6.8 g/dl, ALB; 2.6 g/dl, BUN; 35 mg/dl, CRTN 2.1 mg/dl, Na; 134 mEq/l, K; 4.3 mEq/l, Cl; 98 mEq/l, Ca; 3.9 mEq/l. Under parenteral administration of antibiotics, ERCP was performed. Duodenal papilla, situated at the edge of a large duodenal diverticulum, was markedly swollen. Suppurative bile was excreted from the papillary orifice at the time of cannulation, and the diagnosis of suppurative cholangitis was made. Common bile duct stones were demonstrated with minimal infusion of the contrast medium. After successful EST, a nasobiliary catheter (7 Fr) with a pigtail curl tip was inserted above the stones without incident. Thereafter, the serum bilirubin level was normalized and the general condition of the patient improved. There appeared no upper gastrointestinal symptoms such as nausea or vomiting after placement of the catheter. On the 9th hospital day, the patient recognized dizziness and coldness of the extremities and suddenly vomited a small amount of fresh blood. The hemoglobin concentration was 7.3 g/dl. The systolic blood pressure fell from 130 to 100 mmHg. The nasobiliary catheter was withdrawn. Endoscopy was performed, and findings showed an intramural rupture of the esophagus (Fig. 1). Esophageal mucosa was circumferentially disrupted at the lower esophagus between 30 cm from the incisor and the esophago-gastric junction. Mild bleeding was also observed. No other bleeding sources were demonstrated endoscopically in the stomach and the duodenum despite collection of a moderate amount of fresh blood in the stomach.

Conservative management was instituted with blood
transfusion, nothing by mouth and parental alimentation. The patient's vital signs were immediately stabilized and she became well in one week. Follow-up endoscopy, performed on the 16th hospital day, showed recovery of the esophageal mucosa (Fig. 2a) except a discrete ulcer at the esophagogastric junction (Fig. 2b). No signs of sliding hernia were observed endoscopically. She was discharged in good condition.

Discussion

Esophageal perforation is a relatively rare condition. It has been classified into spontaneous (1–7) and acquired (8–11) perforations according to the causes, and further subclassified into intramural and transmural by the depth of the lesion (1). Most of the acquired perforations are secondary to trauma (8), foreign bodies (8), intraesophageal instrumentation (8–10), or esophageal interventions (9, 11). Emetic pressure (1, 12) or direct physical force to the esophageal mucosa may induce mucosal tear and intramural hematoma, proceeding further to dissect the esophageal wall either intramurally or transmurally (3, 13). Abscess formation, complicated with infectious material from the mouth, worsens the disease process (14, 15).

In cases of instrumental esophageal perforation,
trauma to the esophageal mucosa usually occurs during the procedures such as intubation, esophageal dilatation, or introduction/manipulation of endoscopes (1, 8, 9, 11). In the present case, the fact that the abrupt onset of clinical symptoms and signs appeared 9 days after ERCP opposes the feasibility that the lesion occurred during the first endoscopic examination. The possibility that esophageal perforation occurred secondary to the emetic pressure seems least likely since there were no gastrointestinal symptoms including nausea and vomiting during the catheter placement. Long laceration of the esophageal mucosa with fresh bleeding was confirmed endoscopically at the time of clinical manifestations. Furthermore, a discrete ulcer at the esophago-gastric junction was observed on the follow-up endoscopy. According to these observations, it may be postulated that nasobiliary catheter eroded the esophageal mucosa at the esophago-gastric junction during its intubation and the mucosal tear progressed upwards to dissect the mucosa. Mechanical stimulation to the esophago-gastric junction may cause a mucosal injury, but there have been no reported cases of esophageal perforation during a catheter placement such as a feeding tube or nasobiliary catheter so far as we know. In the present very fragile elderly patient, any impaired protective mechanism of mucosal integrity of the esophagus and/or acid reflux in the condition of long-term catheter placement might contribute to the pathogenesis of esophageal perforation.

Diagnosis of esophageal perforation is usually made with fluoroscopy or endoscopy. A definite diagnostic finding on esophagogram is a double-barrelled appearance of the esophagus (1, 3, 5, 6, 11, 13, 15, 16). The finding, however, is detected only in half of the patients according to a report (17). Endoscopy may be complementary or even confirmatory. In general, endoscopy is the most suitable for detecting mucosal lesions and the presence of bleeding in the upper gastrointestinal tract. Mucosal detachment, typically recognized as a double-barrelled esophagus on esophagogram, may undoubtedly be easily recognizable by endoscopy. Furthermore, mucosal lesion and source of bleeding depend solely on endoscopic observation. In the present case, eccentrically detached mucosa and bleeding from the esophagus could be readily noticed on endoscopy.

Palliative non-surgical treatment has been considered feasible and acceptable for instrumental esophageal perforation unless the perforation is complete and associated with life threatening complications (9, 16). To avoid precipitating factors is mandatory; that is, nothing by mouth, withdrawal of the instrument, and reduction of gastric acid secretions or gastroesophageal acid reflux. Spontaneous recovery of the lesion is expected in most cases.

Spontaneous intramural rupture of the esophagus should be kept in mind as a possible complication of nasobiliary catheter placement particularly in compromised or very elderly patients.

References

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