A Case of Spontaneous Esophageal Rupture Treated with Conservative Therapy

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(Received July 19, 1988)

A 51 year-old male was admitted because of abrupt hematemesis and loss of consciousness. Emergency endoscopy depicted a giant esophageal ulcer on the left side extending from the middle intrathoracic region to the lower intrathoracic region. Esophagography, performed on the second day of admission, revealed a huge cavity (10 cm × 7 cm) filled with contrast medium resulting from a rupture in the ulceration.

His state of shock improved with conservative therapy and no severe mediastinitis was noted. The drainage from the cavity into the lumen of the esophagus was considered to be acceptable from esophagography and an endoscopic examination.

Secondary to his stable condition and continuous drainage, this patient was treated conservatively throughout his clinical course. The patient was given intravenous hyperalimentation (IVH) until the 25th hospital day and was medicated with broad spectrum-antibiotics. On the 21st hospital day the size of the esophageal cavity was markedly decreased (7 cm × 2 cm). Only small irregular mucosa was noted on the esophagogram taken 6 weeks after admission. Six months after the onset, an X-ray examination revealed complete healing of the spontaneous esophageal rupture with no recurrence.

(Key Words: Esophagus, Rupture, Boerhaave syndrome, Conservative treatment)

INTRODUCTION

Transmural spontaneous esophageal rupture was first described in 1724 by Boerhaave (2). In the past, endoscopic examination was considered as a contraindication, but recently, several reports (4, 6, 12) state that endoscopic examination is useful for diagnosis.

The prognosis of transmural spontaneous esophageal rupture has improved with the development of intravenous hyperalimentation and broad-spectrum antibiotics (10).

Traditionally the treatment of spontaneous esophageal rupture was surgical, but recent reports (11, 14, 18) attest to the success of nonoperative management of these patients. The prognosis of nonoperative treatment for spontaneous esophageal ruptures is comparatively good at present. Therefore, the number of operations performed on these patients should decrease.

In previous reports of non-operative treatment cases, the size of the lesion was almost always below 3 cm. However, in this paper, we report a case of a very large spontaneous esophageal rupture (10 cm × 7 cm) treated conservatively without surgery.

CASE REPORT

A 51-yr-old man was admitted to our hospital because of abrupt hematemesis and loss of consciousness. He had been diagnosed as a schizophrenica about 30 yrs before, and had a past history of gastric ulcer and chronic hepatitis.

On admission, a physical examination revealed anemia and tachycardia. His temperature was 37°C; pulse rate 110 beats/min; respiratory rate 20/min; and blood pressure 80/ mmHg. On examination of the lungs, there
were mild course crackles bilaterally at the bases. Heart examination revealed no abnormality. His abdomen was soft and flat. No tenderness or abdominal mass was noted.

Laboratory values were as follows: hemoglobin, 10.4 g/dL; hematocrit, 30.6%; leukocyte count, 14,900/cmm; GOT, 106(10-40U/L); GPT, 159(5–55U/L) and LDH, 380(127–230U/L). All other clinical laboratory data were within normal limits.

A chest roentgenogram revealed a small amount of air in the upper mediastinum consistent with mild mediastinitis (Fig. 1).

Electrocardiogram revealed sinus tachycardia of 110 beats/min and no sign of specific ST-T changes.

Emergent endoscopy depicted a giant esophageal ulcer with massive blood coagulation and pus on the left wall from the middle intrathoracic esophagus to the lower intrathoracic esophagus (Fig. 2).

Esophagography showed an extravasation of gastrografin and revealed a huge cavity (10 cm x 7 cm) filled with contrast medium secondary to a rupture in the ulceration (Fig. 3).

The drainage from the cavity to the lumen of the esophagus was considered acceptable by endoscopic examination. Extravasation of gastrografin was localized in the mediastinum. The patient's state of shock improved with fluid and blood transfusion. There were no signs of severe mediastinitis or sepsis in his clinical course. Although this patient had a huge cavity over 10 cm in length, his vital signs was stabilized and the cavity continued to drain well. Therefore, we decided to treat him conservatively using IVH and broad spectrum antibiotics under close supervision with follow-up X-ray and endoscopic studies.

On the 21st hospital day, esophagography revealed an obvious reduction in size of the cavity (Fig. 4-a) and an endoscopic examination showed that esophageal ulceration was overlayed by a granulation tissue (Fig. 5). Therefore, oral intake was started on the 25th hospital day. After starting oral intake, no laboratory data or clinical symptoms changed.

His lesion was large in size and he had symptoms of schizophrenia. For that reason his discharge was delayed until the 83rd hospital day.

The follow-up esophagography, performed before discharge, depicted no cavity or extravasation of the contrast medium, and showed only an irregular mucosal surface (Fig. 4-b). Therefore, the esophageal ulceration appeared to be completely healed.

Follow-up studies performed 3 months after discharge showed total resolution of the lesion without dilatation or stenosis of the esophagus (Fig. 4-c).

![Admission chest X-ray showing mild mediastinitis.](image-url)
Fig. 2 On admission, emergent endoscopic picture showing giant ulcer with coagulation and pus.
Fig. 3  On admission, esophagography showing extravasation of gastrografin from the middle to lower portion.

Fig. 4-a  Follow-up esophagogram showing obvious reduction of the lesion (21st hospital day).
4-b  Only an irregular mucosal surface was noted on the esophagogram taken 6 weeks after onset.
4-c  Three months after discharge; esophagogram showed no abnormality or any recurrence.
Fig. 5  Follow-up endoscopic picture; esophageal ulceration was overlayed by granulation tissue.
DISCUSSION

Spontaneous esophageal rupture was first described by Boerhaave (2) in 1724 and has been subsequently well documented and reviewed in several papers (8, 9, 11). Recently, the clinical picture of spontaneous esophageal rupture has become well recognized, so that it is often correctly diagnosed in the early stage of its clinical course. Spontaneous esophageal rupture is characterized by severe pain after abrupt vomiting, particularly in alcohol drinkers. Labor, coughing, and defecation have also been reported as other causes of spontaneous esophageal rupture. The causative mechanism is considered to be a rapid rise in intramural pressure with sudden distension induced by vomiting (17). A discordant vomiting reflex, which is a complex act requiring the synchronous relaxation and contraction of many voluntary and involuntary muscles, is considered one of the important causal factors in spontaneous esophageal rupture. This discordance leads to physiologic obstruction due to failure of relaxation of the upper or lower esophageal sphincters at the moment of the greatest propulsive force (6).

Approximately 90% of spontaneous esophageal ruptures occur on the left side of the distal esophagus. Several reasons are given for this predilection, including thinning of the musculature in this area, segmental defects in the circular layer, weakening of the wall by entrance of vessels and nerves, anterior angulation of the esophagus at the left diaphragmatic crus, and lack of adjacent supporting structure (6).

The shape of most ruptures is linear along the longitudinal axis. Tears have been reported with lengths of nearly three centimeters. However, this case with a 10 cm tear along the longitudinal axis is considered one of the largest cavities among the reported cases.

In previous papers, the prognosis of spontaneous esophageal rupture has been very poor, with one study reporting a 100% mortality within 7 days of rupture without surgery, and only 70% overall survival with surgical intervention (6). However, at the present time it is said that mortality and morbidity rates can be significantly lessened by earlier diagnosis and prompt surgical therapy within approximately 12 hours of the catastrophic event (1). It has been reported that mortality rates in cases treated surgically more than 12 hours after onset of the rupture are in excess of 60%. In the cases with early diagnosis and treatment this figure may decrease from 10 to 30% (3). Therefore, it appears that a delay in diagnosis leads to increased mortality and morbidity because simple primary repair is either tenuous or no longer possible. Treatment of spontaneous esophageal rupture is mainly surgical; however, several recent reports (7, 12, 15) attest to the success of nonoperative management of these patients with a subsequent increased in the number of cases treated conservatively.

Case reports of spontaneous esophageal rupture with nonoperative conservative treatment show a prognosis similar to cases treated surgically. Cameron gave a mortality rate of 38% in a group managed surgically, and only a 9% mortality rate in the conservatively managed patients. Furthermore, Lyons (13) noted a 39% mortality rate in major operations, but among conservatively managed patients this rate was only 9%.

Most reported cases of spontaneous esophageal rupture that were treated conservatively had relatively small cavities. However, the size of the cavity in the present case was considerably larger (10 cm \times 7 cm).

In the present case, the patient's state of shock was rapidly improved by fluids and blood transfusion, and severe mediastinitis was not noted both on admission and throughout the clinical course. The drainage from the cavity to the lumen of the esophagus was considered adequate by endoscopic examination. Thus, the size of the cavity was not considered to be an important factor in deciding the way in which to treat spontaneous esophageal rupture. Broad spectrum antibiotic therapy and IVH are the main thrusts of nonoperative management. Our patient was given IVH without any oral intake. Since the tear was found to be markedly reduced on subsequent esophagography, oral administration was started on the 25th hospital day. Antibiotics were administered until the 23rd hospital day.

Our criteria for the conservative treatment of spontaneous esophageal rupture are as follows. 1) The general condition of the patient should be stable with improving clinical sym-
ptoms. 2) The esophageal disruption should be localized within the mediastinum or between the mediastinum and visceral lung pleura without evidence of severe mediastinitis, severe pneumothorax, or pyelothorax. 3) Drainage from the cavity to the lumen of the esophagus should be adequate and continuous. 4) There should be no deterioration of the lesion in any follow-up examination. 5) Close follow-up via esophagoscopy and esophagography should be scheduled.

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