Spontaneous Rupture of the Stomach in Preschool Age Children: A Report of Two Cases

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Abstract: The cases of two preschool-age children who suffered spontaneous gastric ruptures are reported herein. The first was a 2-year-old girl with tetralogy of Fallot, transferred to our hospital due to shock. A laparotomy was performed under the diagnosis of gastrointestinal perforation, and two perforations of the posterior wall of the gastric fundus were found. The second case, a 4-year-old girl who had previously experienced an episode of gastric dilatation, was admitted to our department with abdominal distention and vomiting. An abdominal X-ray film revealed a pneumoperitoneum, and an emergency laparotomy was performed, confirming a round rupture in the posterior wall of the stomach. Both patients had a satisfactory postoperative course.

Key Words: spontaneous gastric rupture, preschool-age children

Introduction

Spontaneous rupture of the stomach is a potentially-fatal event which occurs most commonly during the neonatal period.1-5 Nevertheless, a number of reviews do not consider newborn cases, and almost all such reports are focussed on adult gastric ruptures.6-11 However, a few cases of spontaneous gastric rupture occurring in infants over 1 year of age have been reported recently in Japan,12-15 These cases showed several common features. We present herein two additional cases of spontaneous gastric rupture occurring in preschool age children and discuss this etiology of this disease entity.

Case Reports

Case 1

A 2-year-old girl was transferred to our hospital with respiratory distress and abdominal distention. She had accompanying tetralogy of Fallot; however, because she had been relatively well except for a slight failure to thrive, surgical correction had not been performed. On the day prior to admission, she had complained of abdominal discomfort and vomiting. An abdominal X-ray film revealed a pneumoperitoneum, and an emergency laparotomy was performed, confirming a round rupture in the posterior wall of the stomach. Both patients had a satisfactory postoperative course.

Laboratory data on admission showed marked acidosis, hypoxemia, and hyponatremia. Therefore, controlled ventilation was started immediately. An abdominal radiograph obtained in the lateral decubitus position showed free air in the abdominal cavity. After stabilizing her condition with massive fluid replacement and mechanical ventilation, a laparotomy was performed, which revealed two perforations surrounded by necrotic tissue in the posterior wall of the gastric fundus. The necrotic tissue containing the perforations was trimmed and sutured in two layers. However, we were unable to detect any condition which would have caused gastric rupture. Pathological examination of the resected specimen from near the perforations showed transmural necrosis with acute inflammation, but there were no findings such as ulceration, a muscle defect, or thrombosis, which could have led to necrosis or perforation. The patient had an uneventful postoperative course and has remained well since her discharge from hospital.

Case 2

A 4-year-old girl was in good health until 2 months prior to admission, when she experienced an episode of ab-
dominal distention and vomiting due to marked gastric dilatation (Fig. 1a) which subsided quickly with conservative therapy. After this event, she remained well without any symptoms suggestive of a viral infection or gastroenteritis until the day of her admission, when she experienced severe abdominal pain. She was taken to her family physician, who made a diagnosis of a gastrointestinal perforation, and she was immediately transferred to our hospital. Physical examination on admission revealed a well-developed child who appeared lethargic, with abdominal distension. Laboratory data on admission showed leucocytosis and a slight imbalance of electrolytes, and plain abdominal roentgenogram demonstrated a large amount of free air under the diaphragm (Fig. 1b). Thus, a celiotomy was carried out immediately under the diagnosis of gastrointestinal perforation. After removing approximately 1200 cc of light-brown fluid containing gastric juice and partially digested food particles, a gastric rupture in the posterior wall of the major curvature was found (Fig. 2). The absence of any abnormality at the outlet of the stomach was confirmed by insertion of a balloon catheter. A simple closure was performed after trimming of the necrotic lesion around the rupture. Microscopic examination of the gastric wall near the rupture revealed a normal gastric wall structure with necrosis, and we were unable to determine the causative factor of the rupture from this specimen. Her postoperative course was uneventful and she has remained well since her discharge from hospital.

Discussion

Gastric rupture or perforation is a potentially fatal condition occasionally encountered in adults or neonates. The majority of such episodes in adults are caused by a carcinoma or peptic ulcer, although a few cases of spontaneous rupture were reported during the 19th century. Albo et al. reviewed 44 cases of spontaneous gastric rupture, including that of their own patient, in 1963. According to this review, the spontaneous ruptures had some common features. Of the 44 patients, 34 were female; spontaneous rupture frequently occurred after overindulgence; and ruptures of the lesser curvature were observed in 31 of the 44 patients. Miller postulated that the following tetralogy would suggest a diagnosis of gastric rupture:

Fig. 1. a A prominent gastric dilatation was observed by abdominal radiography taken at another hospital. b A large amount of air was detected under the diaphragma, which notably resembled the saddle-bag sign observed in neonatal gastric rupture.