Neonatal Gastric Perforations: Are They Really Spontaneous?

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Abstract

Case Report We report a case of 4-day-old male infant who developed rapid abdominal distension with progression to shock. Abdominal radiography showed free gas under diaphragm for which emergency laparotomy was done revealing a perforation in the greater curvature of the stomach that was sutured after excising surrounding ischemic stomach wall.

Keywords Gastric · Perforation · Neonatal · Spontaneous · Laparotomy

Introduction

Gastric perforation in the newborn is a rare clinical condition of uncertain etiology with high mortality, especially in premature infants. Legar et al. reported the first successful repair of gastric perforation in a newborn in 1950 [1, 2]. The etiology and pathogenesis of gastric perforation in the neonatal period are still unknown, although premature birth and low birth weight are known risk factors. The first clinical sign in the

majority of cases is abdominal distension associated with rapid development of shock. Early identification and treatment of spontaneous gastric perforation significantly reduces mortality and morbidity.

Case Report

A male neonate on the fourth day of life developed rapid abdominal distension and shock. An abdominal supine radiograph study revealed free gas under diaphragm (Fig. 1); the neonate was resuscitated, and an emergency laparotomy was performed. Upon exploration, a perforation measuring 5 mm×5 mm was found on the greater curvature of the stomach with ischemia surrounding the stomach wall. The necrotic tissue was excised and the perforation was closed. Pathological examination of the necrotic tissue showed mucosal necrosis and transmural hemorrhage. The baby needed vasoactive support and remained in critical condition for the next 2 days. The subsequent hospital course was uneventful and he was discharged on 12th postoperative day tolerating oral feedings.

Discussion

Neonatal gastric perforations predominately affect premature infants and low birth weight baby, but it can also occur in healthy term infants as in our case. Dickens et al. reported the incidence of neonatal gastric perforation as 34 per 1,000 live births with males being affected four times more than females with usual age of presentation between the second and seventh day of life [3] as in our case. Signs and symptoms of gastric perforation include sudden onset of abdominal distention capable of compromising ventilatory support, increased gastric residue, tenderness, lethargy, and apnea. In some cases, it

This is a case report titled **Neonatal gastric perforations: Are they really spontaneous?** Patient was admitted in our hospital & operated by us.

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Fig. 1 Massive pneumoperitoneum in a 4-day-old neonate

is accompanied by bilious vomiting, features of sepsis, and it can progress into shock and respiratory failure [2, 4]. Differential diagnoses include necrotizing enterocolitis, septicemia, intestinal obstruction, spontaneous pneumoperitoneum without gastrointestinal perforation, and others. Radiographic confirmation of a massive pneumoperitoneum in the absence of a gastric gas bubble, bowel air–fluid levels, or pneumatosis intestinalis are suggestive of gastric perforation. Gastric perforation is one of the most common causes of pneumoperitoneum during the first week of life [5]. The only treatment for gastric perforation is urgent surgical repair. Vigorous supportive measures, intravenous infusions, antibiotics, nasogastric suction, and vasoactive support are mandatory. In the literature, few authors recommend needle decompression of the abdomen with a large IV catheter for improving respiratory and circulatory functions during the evaluation and resuscitation of the infant prior to definitive surgical intervention with prompt surgical intervention, with debridement of necrotic tissue and primary repair of the perforation [6]. A thorough examination of the stomach for a second perforation and the entire gastrointestinal tract for other unsuspected perforations or abnormalities should be carried out [4, 6].

Despite an increasing number of cases, the etiology may be difficult to determine. Recently, several factors, including prematurity and concomitant gastrointestinal lesions, have been implicated as contributing factors. Also, a number of other theories have been proposed to explain these events, including hypoxic stress leading to gastric ischemia by selective shunting of blood away from the splanchnic vascular bed, sepsis, and mechanical rupture of the stomach secondary to increased gastric pressure due to lack of coordination or

immaturity of the vomiting mechanism in infants. The use of positive pressure ventilation or nasal continuous positive airway pressure without decompression of the stomach and treatment with steroid therapy for bronchopulmonary dysplasia are other possible causes [1, 5, 7]. Because of known gastric hyperacidity in the first few days of life and gastric stress ulcers that have been reported in a variety of critically ill infants, it has been proposed that perforation can result from the transmural necrosis of such lesions [8]. Suggestions for a good outcome are early diagnosis, vigorous resuscitation, and prompt surgical exploration.

Conclusion

Neonatal gastric perforation, which is a rare entity with very high mortality and complication rates, initial management is directed towards stabilization of the patient. The proper therapeutic regimen includes fluid and electrolyte replacement, antibiotics, and prompt surgical intervention. Recent reviews have suggested that early diagnosis of neonatal gastric perforation can affect the outcome favorably.

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