Spontaneous Neonatal Grastric Perforation: Case Report and Review of Literature

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Abstract

A case of spontaneous neonatal gastric perforation in a preterm baby presenting as an acute abdomen is presented. The challenges faced at diagnosis are highlighted and the literature is reviewed on the topic.

Keywords: Gastric perforation, neonate

Introduction

Gastric perforation in the neonate is rare, serious and life-threatening[1,2]. Most of the cases occur in premature babies, especially those on mechanical ventilators. The rest are associated with gastrointestinal lesions like necrotizing enterocolitis. Pre-maturity (and problems with operating on such small children), and delay in diagnosis cause high mortality. We report a case of neonatal gastric perforation in a premature, low birth-weight boy treated successfully at our centre so that clinicians working with this sub-set of children will have a high incidence of suspicion so that prompt diagnosis and early operation can reduce mortality.

Case Report

The baby was delivered at 35th week gestation following spontaneous rupture of the amniotic membrane. The mother, para 4, had febrile illnesses during the 3rd, 4th, and 5th months of pregnancy. Delivery was via supervised vaginal delivery. Birth weight was 1.7kg. Apgar scores were 4 and 8 at 1 and 5 minutes. Baby was put to breast soon after delivery. On the 2nd day of life baby started refusing feeds. He then stated vomiting altered blood. By the 3rd day his abdomen was distended and tympanitic with absent bowel sounds. Plain abdominal X-ray showed massive pneumoperitoneum (fig 1). He was resuscitated with intravenous fluids, antibiotics and nasogastric decompression and taken for laparotomy.

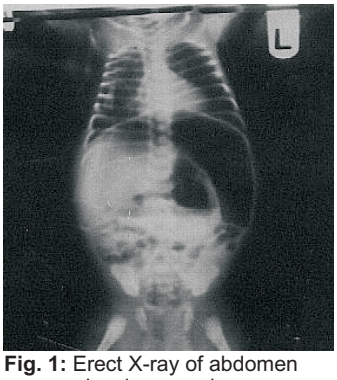


Fig. 1: Erect X-ray of abdomen showing massive pneumoperitoneum

Access to the abdomen was via a midline supra-umbilical incision.There were purulent fibrinous exudates in the sub-hepatic space and around the stomach. The stomach was flabby and grossly dilated with a 4cm-ragged tear on the anterior wall in the antral region. No blood clot was seen. Other parts of the stomach, small and large bowel, liver and gall bladder were grossly normal.

The edges of the tear were minimally trimmed and a two-layer transverse closure done with 3/0 interrupted vicryl suture. Gastrostomy was not done. The peritoneum was copiously lavaged with normal saline and a drain placed in the right sub-hepatic space. The abdomen was closed with 2/0 nylon mass closure. Transfusion of 60mls of packed cells was done intra-operatively.

Ten percent dextrose, cephalosporin and nasogastric tube drainage were continued postoperatively. The urinary catheter inserted intraoperatively was used to monitor hourly urine

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output. The nasogastric tube was removed on the 3rd postoperative day and feeding commenced. He gained weight rapidly. His stitches were removed on 8th postoperative day. He has been discharged from the clinic after follow-up for 14 months.

Discussion

Neonatal gastric perforation (NGP) has been thought to occur spontaneously i.e. without associated gastro-intestinal conditions[1]. The incidence among black populations is reported to be 1/2900 live births, with a male/female ratio of 4/1[1,2]. There is paucity of report from sub-Saharan Africa either from under-diagnosis or few intensive neonatal services that have mechanical ventilators.

Various theories have been speculated in the etiology of neonatal gastric perforation. Herbut[3] in 1943, proposed a congenital absence of gastric musculature predisposing to rupture. Touloukan[4] proposed ischaemic necrosis from decreased blood flow during asphyxia. Shaker[5] postulated increased intraluminal pressure by swallowed air and fluid trapped in the gastric cardia causing mucosal hypoxia, necrosis and rupture.This may be the cause in our patient. Most cases, however occur from mechanical distruptions from gastric overdistention by ventilators used in premature patients[6,7].

Pre-maturity, and delay in diagnosis have been shown to be a common finding in gastric perforation especially non-survivors, but survival has recently improved due to advances in neomatology.

The location of most spontaneous gastric perforation in the newborn is on the greater curvature of the stomach, as in this case.

The clinical presentation may not be straight forward. Diagnosis is usually based on an upright x-ray film of the abdomen which shows the 'saddle' or 'football' sign[1] due to massive pneumo-peritoneum as in our patient .

Early diagnosis, prompt resuscitation and immediate surgical intervention lead to favourable outcome. Primary closure of the rent with delayed-absorbable sutures in 1 or 2 layers is safe. Gastrostomy has been used both for initial gastric decompression and for feeding later. With modern neonatal services gastrostomy is currently probably unnecessary.

Clinical diagnosis of neonatal gastric perforation demands a high index of suspicion. Careful attention to resuscitation, correction of electrolyte and metabolic derangements, meticulous intraoperative technique, and detailed post-operative management are the key points to survival.

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