Soap bubble appearance: an ominous sign

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DESCRIPTION

A female neonate born at 30 weeks' gestation with a birth weight of 1.3 kg was referred to our emergency for progressive distension of abdomen following initiation of tube feeds on day 2 of life. She was born via a preterm vaginal delivery after spontaneous preterm onset of labour. There was no history of invasive fetal procedures, trauma, perinatal asphyxia or umbilical catheterisation. She cried immediately after birth and had Apgar scores of 8 and 9 at 1 min and 5 min, respectively. The baby was fed with undiluted cow's milk by tube feeds. Abdominal distension started since day 2 of life and increased progressively. On examination, she was hypothermic with massive abdominal distension, tense and shiny abdomen with altered orogastric aspirates and absent bowel sounds. Investigations showed thrombocytopenia, elevated leucocyte counts, anaemia and metabolic acidosis. Abdominal X-ray showed dilated bowel loops with soap bubble appearance (figure 1). A provisional diagnosis of neonatal necrotising enterocolitis was considered. The baby was put on external peritoneal drainage and bowel rest with continuous aspiration. Abdominal girth was monitored daily, and serial abdominal radiographs showed resolution of dilatation. Baby was started on broad-spectrum antibiotics and required nasal prong continuous positive airway

pressure support. The abdominal distension gradually improved. The baby was started on minimal feeds and was gradually advanced to full feeds by day 15 of hospital stay.

Necrotising enterocolitis continues to have significant morbidity and mortality in premature neonates. Its overall incidence is 1 in 1000 but is as high as 20% in preterm neonates with birth weight <1500 g.¹ The incidence is inversely proportional to gestational age with 90% occurring in preterm neonates. It may occur in first 2–3 days of life with 90% occurring within the first 10 days.² If necrotising enterocolitis is suspected and there is a doubt in the supine, abdominal radiograph, then a cross-table lateral or a lateral decubitus film is recommended.¹ The index case demonstrated the classical soap bubble pattern of gas distribution seen in necrotising enterocolitis. The differential diagnoses of this soap bubble appearance in abdominal radiographs of a neonate are pneumatosis intestinalis (as part of necrotising enterocolitis) due to intramural bowel gas and meconium plug syndrome due to the air captured between the meconium pellets.³ Pneumatosis intestinalis is a pathognomonic radiological sign of necrotising enterocolitis. It appears as train-track lucency within the bowel wall. Intramural bowel gas is produced by the bacteria in the bowel, and although pneumatosis is seen in 70%–80% of patients with

Figure 1 Straight X-ray abdomen showing dilated bowel loops with soap bubble appearance.

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necrotising enterocolitis, however, it is not specific and may also be seen in volvulus, ischaemic bowel necrosis and neutropenic typhilitis. In the index case, soap-bubble appearance is most consistent with necrotising enterocolitis due to the predisposing factors in this premature infant. Early diagnosis based on clinical and radiological features in a busy emergency room helps in timely care and antimicrobials and improves the outcomes of newborn babies.

Learning points

- ▶ Soap bubble appearance is an important classical radiological finding in neonatal necrotising enterocolitis.
- ▶ A high index of suspicion is needed in preterm babies.
- ▶ Early recognition of this finding and timely prompt intervention can significantly reduce mortality and morbidity.

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