

Can Neonatal Pneumoperitoneum be Managed by Conservative Management Alone ?

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Abstract

Common causes of pneumoperitoneum in neonates includes necrotising enterocolitis (NEC), specific infections, gastro intestinal obstruction, iatrogenic causes, idiopathic focal intestinal perforation, perforation secondary to intra thoracic pathology, mechanical ventilation etc. Primary peritoneal drainage and exploratory laparotomy remain the definitive management of pneumoperitoneum in neonates. Here we report a case of suspected spontaneous idiopathic intestinal perforation managed conservatively with monitoring of vital signs. The neonate had an uneventful recovery. This case highlights the need to identify infants with benign or non surgical causes of pneumoperitoneum thus avoiding unnecessary laparotomies and referrals in these vulnerable neonates.

Key words: Pneumoperitoneum, Necrotising enterocolitis (NEC), Spontaneous intestinal perforation

Introduction

Primary peritoneal drainage and exploratory laparotomy remain the definitive management^{1,2,3,4} of pneumoperitoneum in neonates. However clinical signs and symptoms and investigations can be used to identify infants with benign or non surgical causes of pneumoperitoneum. Some unnecessary laparotomies could thereby be avoided in these vulnerable neonates.

The Case

A three day old term neonate weighing 3kg was referred to our institution with lethargy, poor feeding and abdominal distension. The baby was delivered by caesarian section. The antenatal period was uneventful; however there was history of delayed cry following birth. APGAR scores were unavailable. Meconium was passed within 24 hrs of birth. There was no history of bilious vomiting or bloody stool.

On examination reflexes were depressed. Liver and spleen were palpable well below costal margin. Liver span was normal and liver dullness was shifted down. There was no muscle guarding or abdominal tenderness. Intra abdominal peristaltic sounds were faint. Examination of the respiratory and cardiovascular system was uneventful. No signs of birth trauma or any dysmorphism noted.



Fig 1: Day 3 straight x-ray abdomen arrows showing gas under diaphragm bilaterally.

Haemogram (Hb 10 gm%, TLC- 12,000/mm³, N₃₄₋₆₀L₂₋₄E₂M₄) and CRP was raised. The most dramatic picture was revealed in the straight X-RAY abdomen. It revealed free gas under both the domes of diaphragm with downward and medial displacement of liver and spleen. The intestinal loops were dilated but there were no signs of necrotising enterocolitis like pneumatosis intestinalis or gas in the portal vein. Stool for occult blood was negative. Abdominal paracentesis was done which revealed a transudative fluid and no signs of peritonitis.



Fig 2: Day 10 straight x-ray abdomen arrows showing minimal collection under diaphragm, considerable resorption of free gas indicating no fresh leakage

The diagnosis of spontaneous idiopathic intestinal perforation was made. Since the general condition of the patient was stable, a conservative management was decided upon with continuous monitoring of vital signs and provision of an exploratory laparotomy whenever wanted.

Patient was put on conservative management with IVF and antibiotics with uneventful recovery, further strengthening the diagnosis. A repeat skiagram on day 8 (D-8) of life showed considerable absorption of free gas. Repeat skiagram at D-10 showed no free gas under diaphragm.

The baby was discharged at D-17 of life after completing 2 wks of piperacillin tazobactam antibiotic regimen. Baby was absolutely normal at follow up at the age of 1 month.

Discussion

The differential diagnosis of pneumoperitoneum includes NEC, specific infections, gastro intestinal obstruction, iatrogenic causes, idiopathic focal intestinal perforation, perforation following early postnatal steroid or indomethacin use or secondary to intra thoracic pathology, mechanical ventilation, and nasal CPAP etc².

Spontaneous intestinal perforation like NEC is most commonly seen in premature low birth weight infants, but is unrelated to feeding and occurs in an earlier post natal age^{1,3}.

NEC common in low birth weight, premature infants is seen in term neonates with birth asphyxia. The mechanism best known as diving reflex results in

preferential blood supply to the vital organs leading to gut ischaemia.

In our patient there was no pneumothorax, pneumomediastinum, or pneumatosis intestinalis. Thus, the free intraperitoneal air may have been air dissolving from the distended intestines or was a case of isolated bowel perforation which underwent auto sealing.

Primary peritoneal drainage and exploratory laparotomy remain the definitive management of pneumoperitoneum.^{1,2,3,4} the latter being preferred if the general condition permits. However in our case going by the vital signs and symptoms we saw it was possible to manage pneumoperitoneum conservatively⁵, saving the child the trauma of an unnecessary laparotomy.

Conclusion

Therefore, the absolute indications for surgery in infants with pneumoperitoneum must be established precisely when perforation is suspected, according to the presence or absence of abdominal tenderness and muscle guarding on physical examination, radiographic findings, and abdominal paracentesis.

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