

## Letter to the Editor

Dear Editor,

### Neonatal Pneumoperitoneum Without Certain Aetiology

Pneumoperitoneum is not rare in neonates, Khan reported about 16.5% incidence among the neonatal admissions.<sup>1</sup> The aetiologies are complicated. It most often occurs after the rupture of an abdominal visceral organ, may also be secondary to barotraumas in ventilated neonates, especially with severe respiratory disease.<sup>2</sup> Here we report a case of neonatal pneumoperitoneum without either of these known aetiologies and share the experience of management.

A 1660 grams, female infant was born at 30 weeks gestational age by cesarean section because her mother suffered heart failure. After birth, the infant was blue with no breath, so she was given suction and stimulation. But she didn't respond well to the stimulation and the heart rate decreased to less than 100 bpm, then she was immediately resuscitated with positive pressure ventilation, chest compression, and administration of epinephrine through trachea. After that the child gradually developed tachypnea and grunting. Subsequent chest X-ray (Figure 1) showed respiratory distress syndrome. Pulmonary surfactant was given and mechanical ventilation started. On second day, the infant suddenly developed abdominal distension without any vomiting, while the meconium passed in the first 24 hours. On examination the infant was active with good general condition, capillary refill time was less than 2 seconds. Abdomen was distended but soft. The abdominal X-ray showed free gas under both domes of diaphragm (Figure 2), and the chest radiograph revealed bilateral pulmonary haziness without pneumothorax or pneumomediastinum.

With the obvious abdominal distention and X-ray findings, the surgeon gave an exploratory laparotomy. To our surprise, the entire gastrointestinal tract was integrat with normal bowel colour and movements, and apart from the gas, there was no evidence of pneumatosis intestinalis, or abdominal congenital anomalies. The baby was weaned off ventilator to room air 24 hours after the operation, and was started feeding 5 days later. The feeding was advanced progressively and the baby got full feeding on 21st day of life.



**Figure 1** Respiratory distress syndrome on the 1st day of life.



**Figure 2** Pneumoperitoneum on the 2nd day of life.

Neonatal pneumoperitoneum usually arises from a perforated abdominal visceral organ. In the retrospective analysis, Khan found necrotising enterocolitis (NEC) remained the single most common cause of pneumoperitoneum in newborn, however, around 50% of patients, it was not related to NEC. Perforated pouch colon, isolated colonic perforations, caecal perforations, gastric and duodenal perforations were the main causes of pneumoperitoneum not related to NEC.<sup>1</sup> Another etiology is air leak, which can go into the adjacent loose connective tissue of pulmonary vascular sheaths and then produce peripheral gaseous dissection with interstitial emphysema, subpleural bleb formation, and pneumothorax. Gaseous dissection centrally can lead to subcutaneous and interstitial emphysema, pneumomediastinum, pneumopericardium, and pneumoperitoneum. Six cases of ventilator-associated pneumoperitoneum reported by Knight and Abdenour all had radiographic evidence of posterior pneumomediastinum.<sup>3</sup>

In this case, there was no evidence of air leak when the child was diagnosed pneumoperitoneum, though she was on mechanical ventilation. Neither gastrointestinal perforation was found during the operation. We speculated an undetectable pulmonary rupture with dissection into the peritoneal cavity would be the explanation because the child had the history of positive pressure ventilatory support. The treatment may be empirical when the etiologies are not clearly defined. Avasthi et al reported a case of spontaneous idiopathic neonatal pneumoperitoneum managed successfully with

conservative treatment.<sup>4</sup> In our case, the baby underwent an unnecessary laparotomy, it reminded us that management of every case of pneumoperitoneum should be cautious, especially for laparotomy.

## References

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