Benign pneumoperitoneum in a newborn: a case report

Yenidoğanda benign pnomoperitonium: olgu sunumu

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Abstract
Pneumoperitoneum in a newborn is almost always interpreted as evidence of rupture of a hollow viscus. As pneumoperitoneum signals gastrointestinal perforation, prompt laparotomy is generally required. However, pneumoperitoneum on rare occasions can present without any gastrointestinal leak i.e. infants with acute respiratory distress with interstitial pneumonia can develop pneumoperitoneum. A rare case of neonatal pneumoperitoneum in absence of a bowel perforation or intrathoracic air leak has been reported.

Key Words: **Benign pneumoperitoneum; Newborn.**

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Özet
Yenidoğanlarda, pnomoperitonium genellikle gastrointestinal sistemdeki perforasyonlardan kaynaklanıp ve laparotomi gerektirir. Nadiren pnomoperitonium, gastrointestinal perforasyon olmaksızın gürülebilir. Solunum sıkıntısı olan respiratuar distres sendromu olan bebeklerde hava kaçağına bağlı olarak pnomoperitonium bildirilmiştir. Biz bu makalede gastrointestinal perforasyon ve pnomotoraksı olmayan pnomoperitonium tablosu geliştiren bir yenidoğan vakasını nadir görülmesi nedeniyke takdim etmeyi uygun gördük.

Anahtar Kelimeler: **Benign pnomoperitonium; Yenidoğan.**

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Introduction

About 10% of the radiological pneumoperitoneum (PP) occurs without hollow viscus perforation. Pseudopneumoperitoneum is defined when the subphrenic lucency does not correspond to free intraperitoneal air: subphrenic fat pad, linear lung atelectasis, abnormal subphrenic shape, Chilaiditi syndrome or subphrenic abscess (1). Pneumoperitoneum is almost always interpreted as evidence of rupture of a hollow viscus in a newborn. As PP signals gastrointestinal perforation, prompt laparotomy is generally required. However, PP on rare occasions can present without any gastrointestinal leak i.e. infants with acute respiratory distress with interstitial pneumonia may develop PP (2). We report a case of neonatal PP without any established cause.

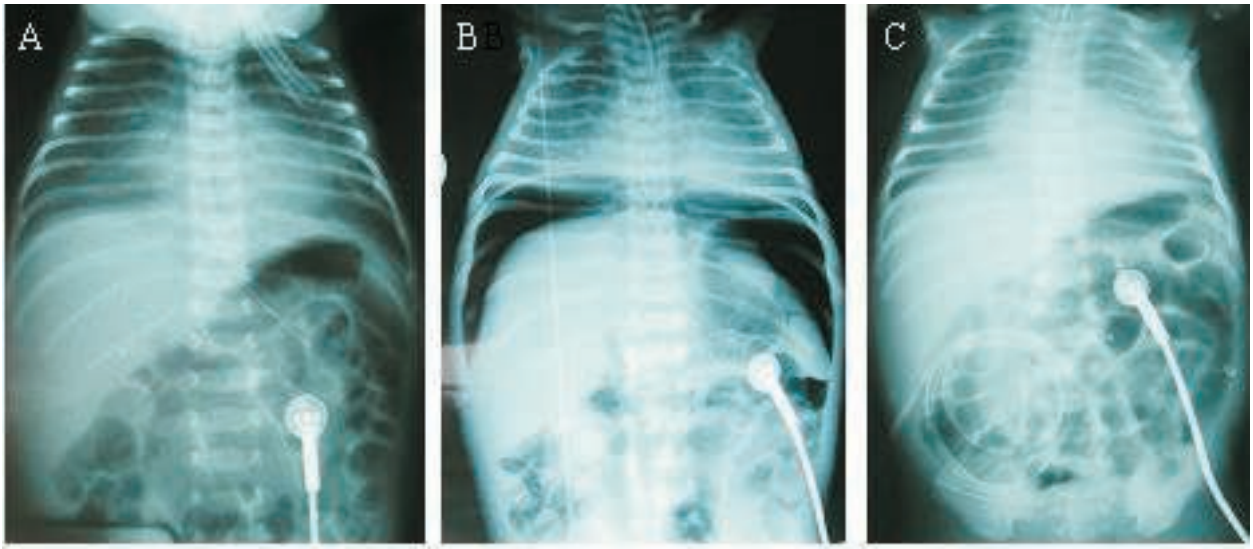
Case report

A newborn infant was transferred to our hospital for respiratory distress. He was the second child of healthy parents. There was no history of maternal disease in pregnancy. He was born after an unremarkable pregnancy and labour at 34 weeks' gestation. The delivery was not complicated with perinatal asphyxia. Birth weight was 2200 g. The child had only evidence of respiratory distress after birth. Since he was deteriorating within the first 12-24 hours and needed more than 40-60 % oxygen, he was intubated and ventilated. He was treated with surfactant replacement twice. The child passed meconium on the first day of life, and was fed adequately. He improved, and was excubated on the fourth day of life. Unfortunately, he developed significant patent ductus arteriosus and was intubated on the 14th day of life. Then, the patient developed abdominal distension of one-day duration on the 15th day of life. The chest was clear. The abdomen apart from mild distension did not have any findings suggestive of peritonitis. The X-ray revealed free gas under both the domes of diaphragm with a few distended bowel loops, and the chest was absolutely clear (Picture 1).

Accoreling to the X-ray findings, we decided to proceed to an exploratory laparotomy. At laparotomy to our surprise the entire gastrointestinal tract was normal and apart from the gas, there was no free fluid or pus in the peritoneal cavity. The lesser sac was opened and the duodenum was inspected thoroughly and the abdomen was closed in layers. The postoperative course was uneventful. The patient received indomethacin (three days), and control echocardiographical examination was normal. The child was started on feeds after 24 hours, and was discharged from the hospital on the seventh post-operative day.

Discussion

Pneumoperitoneum results from dissection of air from the mediastinum along the sheats of the aorta and vena cava, with subsequent rupture into the peritoneal cavity. Infant with these conditions presents with sudden abdominal distension and a typical abdominal radiograph. A more common problem, however, is the difficulty of distinguishing this cause of peritoneal air from a primary gastrointestinal catastrophe, such as perforated ulcer or necrotizing enterocolitis (3). Ilgren et al (4) reported a premature infant with severe respiratory distress developed the clinical and radiological signs of PP. Their case was rare in that pneumothorax was never observed and that interstitial emphysema or ischemic gastrointestinal lesions were not present at autopsy. They speculated that an undetectable pulmonary rupture with prompt dissection into the peritoneal cavity is the most likely explanation for the PP. Our patient was on the positive pressure ventilator, and he developed pneumoperitoneum without air leak phenomenon. Al-Salem et al (5) reported a newborn with PP and free meconium without gastrointestinal perforation. Karaman et al (6) reported six cases of nonsurgical pneumoperitoneum (NP) and speculated that by using one or all of their diagnostic procedures coupled with thorough history and physical examination, a surgical PP may be distinguished from a nonsurgical PP with a reasonable certainty. As stated in their article, while the majority of cases of PP are surgical emergencies, this is not always the case, and needless surgery can result. Although there are many causes of benign PP discussed in their paper, a NP may be differentiated from a PP requiring surgery with the assistance of a diagnostic peritoneal lavage or paracentesis, contrast examination or endoscope. Unfortunately, we did not perform the diagnostic peritoneal lavage or paracentesis. The infant underwent an unnecessary laparotomy, but no great harm is likely to befall him from this over concern on the part of the surgeon. In conclusion, our case is rare in that no demonstrable cause for the free air could be demonstrated, and a paracentesis should be performed to differentiate nonsurgical pneumoperitoneum from surgical pneumoperitoneum.



Picture 1 Showed a few distended bowel loops on the 14th day of life (A), free peritoneal air under the diaphragm on the 15th day of life (B), a few distended bowel loops postoperatively without air leak phenomenon on the 16th of life (C).

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