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LETTERS TO THE EDITOR

Severe bronchopulmonary dysplasia with large pneumatoceles in an extreme preterm newborn

Dear Editor,

Bronchopulmonary dysplasia (BPD) is a major complication of extreme prematurity. The lungs are characterized by areas of emphysema, and fibrosis.[1] Large pneumatoceles due to acquired localized emphysema over-inflation are recognized but are relatively rare in advanced BPD.[2–4]

A male newborn of 580 g birthweight was born at 26 weeks of gestation by c-section to a 33 years old 4G, 3P, gipsy mother, after a full cycle of corticosteroids. The pregnancy was regularly followed, and was complicated by gestational diabetes, preeclampsia and intrauterine growth restriction. The 1st/5th/10th minutes Apgar score were 3/5/7.

He was intubated after birth and received synchronized conventional mechanical ventilation from the 2nd minute of life. He needed surfactant administration three times, because of severe respiratory distress syndrome (RDS). On day (D) two of life he presented a pulmonary hemorrhage. On D17 he was moved from SIPPV+ volume guarantee (maximum settings: InspP = 24 cmH_2O; frequency = 60 min^{-1}; PEEP = 5 cmH_2O; FiO_2 = 0.6; VG = 6.5 ml/kg) to high frequency oscillatory ventilation (maximum settings: MAP = 18; DeltaP = 38; iT = 33%; Freq = 15 Hz; FiO_2 = 1). Blood cultures were negative as was reactive C protein. A 10 days course of systemic dexamethasone was started. Large cystic pneumatoceles appeared in the right and left lower lobe on D19 (Figs. 1 and 2). Taking a wait and see attitude, the pneumotoceles spontaneously regressed on D32 (Fig. 3).[2] Serial cultures of tracheal aspirates from D15 became positive for an extended-spectrum *beta*-lactamase (ESBL) Klebsiella pneumonia strain, only sensitive to amikacin.

Overall, during the neonatal intensive care unit admission the baby was under mechanical ventilation for 90 days, suffered from two episodes of hypertensive pneumothorax (D14 and D25), two episodes of nosocomial sepsis without isolation of agent on blood cultures (D48 and D80) treated with vancomycin + cefotaxime + amikacin, underwent one surgery for retinopathy of prematurity (D68) and presented one episode of necrotizing enterocolitis (D48) treated with vancomycin + cefotaxime + amikacin + metronidazole, for 10 days. Serial blood cultures were negative. Bronchial aspirates were positive an ESBL-Klebsiella pneumonia from D15 to D96, despite two cycles of treatment with systemic amikacin. He died on D96.

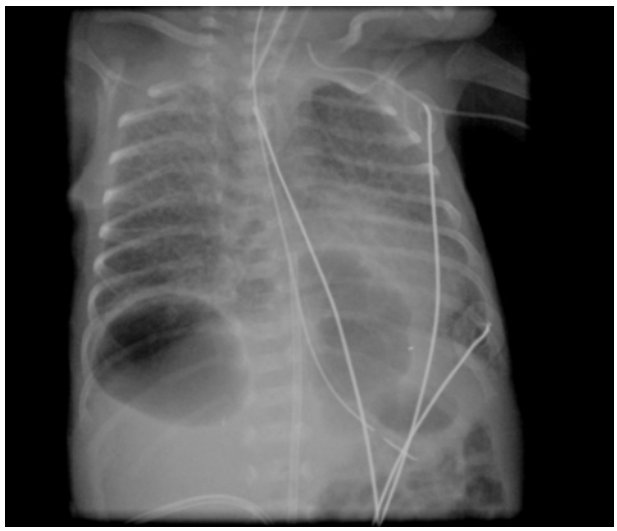

Figure 1 Anteroposterior chest X-ray. Two pneumatoceles in both lower inferior lobes.

Large cystic pneumatoceles are rare in advanced BPD.[1] They are a manifestation of intrathoracic air-leaks of prematurity and are markers for ventilator-induced lung injury and are associated with significant mortality similar to other intrathoracic air-leaks.[2] Pneumatoceles may also occur following acute pneumonia, commonly caused by Staphylococcus aureus in children.[5] Limited data are available about infective pulmonary cysts in newborns. A case of a newborn, who developed multiple pneumatoceles after *Escherichia coli* pneumonia has been described.[5] The case of a premature infant with a kanamycin resistant klebsiella pneumonia in the first week of life is reported in the literature.[6] In infants with pneumatoceles, positive endotracheal culture is a frequent finding and correlates with persistence.[7] Infections caused by multidrug-resistant Gram negative bacilli that produce ESBL enzymes have been reported with increasing frequency in intensive-care units and are associated with significant morbidity and mortality.[8]

Most pneumatoceles disappear spontaneously and do not cause severe symptoms.[2] Pneumatoceles may need percutaneous evacuation under fluoroscopic guidance and/or lobectomy in worsening disease.[9,10] If the clinical condition allows, an expectant attitude is advised, since many cases may resolve spontaneously.[2]

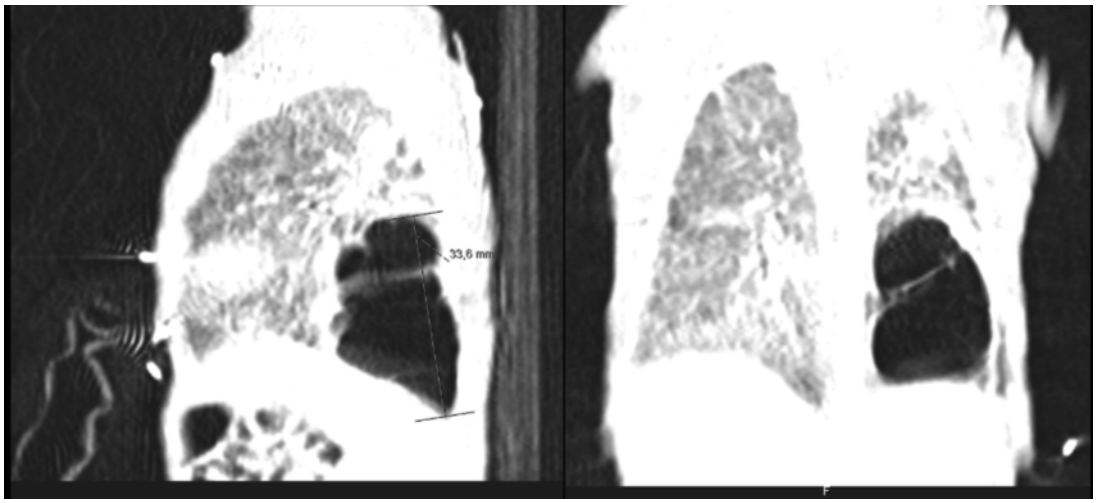

Figure 2 Chest CT scan. Pneumotoceles occupying the left lower lobe are seen (longitudinal length 34 mm and 20 × 19 mm of major axis). Pulmonary parenchyma shows areas of lower density of interstitial pulmonary emphysema.

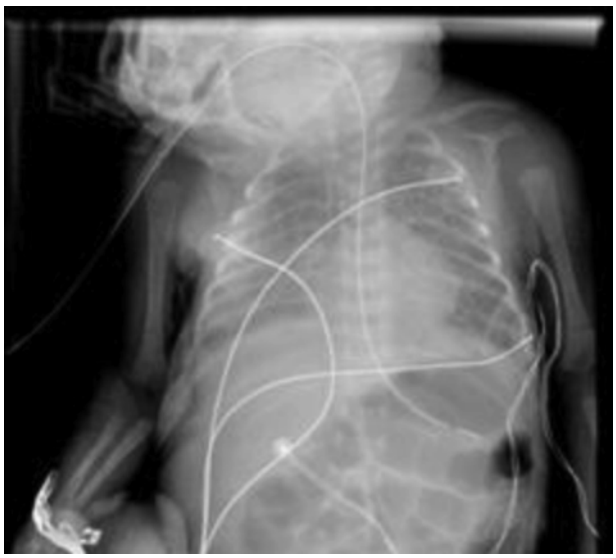

Figure 3 Chest X-ray image after regression of the two pneumatoceles.

Our patient's course was complicated by significant neonatal comorbidities, and the pneumatoceles appeared despite high frequency oscillatory ventilation and a systemic course of dexamethasone. Although without systemic markers of infection, the ESBL Klebsiella pneumonia colonization of the tracheal tree may have played a role in both the severity of the lung disease and its evolution to chronicity. Since the disease did not worsen, close expectant observation was enough and the pneumatoceles spontaneously regressed.

With the presentation of this clinical report on a preterm newborn the authors want to highlight the natural history of pneumatoceles with spontaneous regression and its association to a ESBL Klebsiella pneumonia species in tracheal aspirates.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Peritoneal tuberculosis – A rare diagnosis

Dear Editor,

Peritoneal tuberculosis is a rare disease, often associated with a primary site of tuberculosis. Risk factors include HIV infection, diabetes mellitus, treatment with anti-tumor necrosis factor (TNF) agents, ongoing peritoneal dialysis and hepatic cirrhosis.

Bacilli can enter the peritoneal cavity in several ways, including transmural infection from diseased bowel or, more commonly, by hematogenous spread of infection from a pulmonary focus.[1] Even though the lung is often the primary site of infection, there is clinical or radiologic evidence of pulmonary tuberculosis in only about a third of cases.[2]

We report the case of a 25-year-old woman who developed asthenia, anorexia, weight loss, metrorrhagia and pelvic pain over about 3 months. She was a secretary at a business office, former smoker, and had been appendicectomized one year earlier; there was no other relevant medical history.

Because of the symptoms described, an abdominal and pelvic computed tomography (CT) scan was performed, showing bilateral multiloculated ovarian cysts, with no other relevant findings. Later she underwent diagnostic laparoscopy, revealing multiple adhesions (*frozen pelvis*) and numerous white nodules/granulomas all over the peritoneum, which were biopsied.

Because of the suspicion of tuberculosis during the surgical procedure, a chest X-ray was performed, which showed pulmonary infiltrates in both upper lobes. Later, she underwent a thoracic CT scan, showing *tree-in-bud* pattern predominantly in the upper lobes of both lungs, with a cavitated image in the left upper lobe.

The tests for potentially immunosuppressive infections were negative, including HIV, Hepatitis B and C, Epstein Barr end Cytomegalovirus. Primary immunodeficiencies were also excluded, as immunoglobulin quantification was normal.

The patient underwent fiberoptic bronchoscopy. Bronchial washing culture and polymerase chain reaction (PCR) assay were positive for *Mycobacterium tuberculosis*, even though the test for acid-fast bacilli (AFB) was negative. Analysis of peritoneal fluid samples showed lymphocytosis, with negative AFB. Biochemical analysis of the fluid (including ADA levels) was not performed. Histological examination of the biopsies later confirmed granulomatous peritonitis and culture of the specimen was also positive for *Mycobacterium tuberculosis*.

Diagnosis of pulmonary and peritoneal tuberculosis was established and the patient started antituberculous therapy. The susceptibility testing showed sensitivity to all first-line drugs.

As stated before, immunosuppression plays a major role in the pathogenesis of peritoneal tuberculosis, but in this case the patient was immunocompetent. This diagnosis is frequently difficult, given the nonspecific signs and symptoms, which usually include ascites, abdominal pain and fever.[3]

Although the test for AFB in the peritoneal fluid is highly specific for the diagnosis, it lacks sensitivity,[4] which often makes early diagnosis difficult.

New diagnostic procedures like PCR assay for *M. tuberculosis* could help to address this issue, since they can significantly decrease the time taken to achieve a correct diagnosis and are especially useful when AFB test is negative.[5] In our case, PCR was only performed on the respiratory samples collected during bronchoscopy. Although our patient's condition remained relatively stable throughout the course of investigation, PCR assay can be of utmost value in patients with negative AFB with exclusively extrapulmonary tuberculosis, particularly if their condition is deteriorating, as it can provide a diagnosis much faster than mycobacterial culture of specimens, reducing morbidity and mortality.

Despite the fact that identification of *M. tuberculosis* in any material is the gold standard diagnostic method, negative result of culture cannot exclude the diagnosis of tuberculosis and, even if it is positive, it can be a slow