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Early recognition of congenital lobar emphysema in a well-thriving infant: A case report

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Abstract

Congenital lobar emphysema (CLE), also referred to as congenital alveolar over distension, is characterized by hyperinflation in one or more pulmonary lobes. This condition is a developmental anomaly affecting the lower respiratory tract. Commonly present in the neonatal period, cases beyond the first month of life may pose a diagnostic challenge due to non-specific symptoms. We are reporting a 45-day thriving male infant presented to the Outdoor clinic with the complaint of bringing up feed and at times fast breathing without respiratory distress for the 1 week.

Introduction

Congenital lobar emphysema (CLE) is a rare lung condition seen in newborns and infants, caused by overexpansion of a lobe due to partial airway obstruction. While it often presents with clear signs like respiratory distress early in life, some cases may go unnoticed due to subtle or atypical symptoms, making diagnosis challenging. Air trapping within a collapsed airway leads to progressive lobar hyperinflation, causing the affected lobe to become distended and exert a mass effect that compresses adjacent lobes and displaces the mediastinum in CLE [1]. A rare condition occurring in approximately 1 in 20,000 to 1 in 30,000 live births, with a higher prevalence in males, who are affected about three times more frequently than females [2]. The most frequently affected site is the left upper lobe, followed by the right upper lobe and the right middle lobe. It is typically limited to a single lobe [3]. Congenital lobar emphysema (CLE) is a rare disorder that typically appears during the neonatal period and often poses diagnostic and treatment challenges for the attending clinician [4].

Case presentation

A 45-day-old male infant presented to the Outdoor clinic with the complaint of bringing up feed and, at times, fast breathing due to nasal blockage without respiratory distress for the last 1 week. No other systemic symptoms were reported. The antenatal history was unremarkable and showed regular antenatal visits and normal antenatal scans with no reported exposure to harmful substances during pregnancy or maternal comorbidities.

The birth history: born at 38 weeks via caesarian delivery due to previous caesarian sections, having a good APGAR score (appearance, pulse, grimace, activity, respiration) at 1 and 5 minutes on newborn observation score (APGAR), birthweight 3200g. Post-natal examination was unremarkable. Family history revealed a non-consanguineous marriage and no evidence of congenital/hereditary conditions in the family. The age-appropriate vaccination was administered without adverse reactions and resulted in 2-3 clinic visits, with a Gassy abdomen and nasal blockage.

On the last outpatient department (OPD) visit, the patient appeared vitally Stable, no pallor & cyanosis, thriving, and no dysmorphic features. Respiratory rate 40-50/min, SPO_2-99% in room air, minimal recessions, equal air entry with no added sounds. Heart rate HR 122/min, apex beat palpable on the right side, heart sounds are normal but more obvious on the right side, no added heart sounds appreciated. Systemic examination was normal.

The chest x-ray demonstrated increased translucency of the left upper causing a mild mediastinal shift towards the right side (**Fig. 1**). Contrast-enhanced computed tomography (CECT) chest confirmed the diagnosis of left upper lobe (**Fig. 2**). Ultimately, due to his progressive dyspneic condition, he was referred to the surgery department for opinion and further management. The surgery team planned to operate once the baby gained adequate weight to tolerate the surgery or any deterioration in condition, and prior to that, manage conservatively.

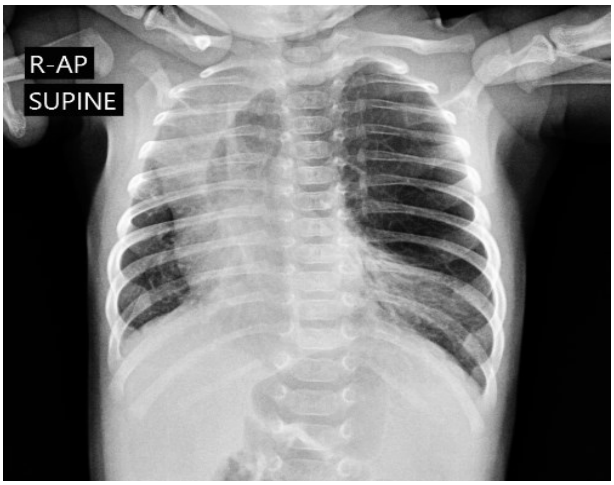

Fig. 1: Chest X-ray: The hyper-expansion of the left upper lobe, characterized by increased lucency and diminished vascular markings, leading to herniation of the lobe across the midline and causing a mild rightward shift of the mediastinum.

Discussion

Congenital lobar emphysema (CLE) is an uncommon pulmonary condition present at birth, marked by excessive inflation of a lung lobe, frequently involving the left upper lobe. This occurs due to partial airway obstruction, which may be caused by abnormal bronchial cartilage or external compression [5]. Congenital heart defects (CHDs) are found in about 14% to 20% of individuals with CLE, with ventricular septal defect (VSD) being the most frequently associated cardiac anomaly [6]. In this case, a 45-day-old infant presented with mild breathing difficulty and recurrent nasal congestion but

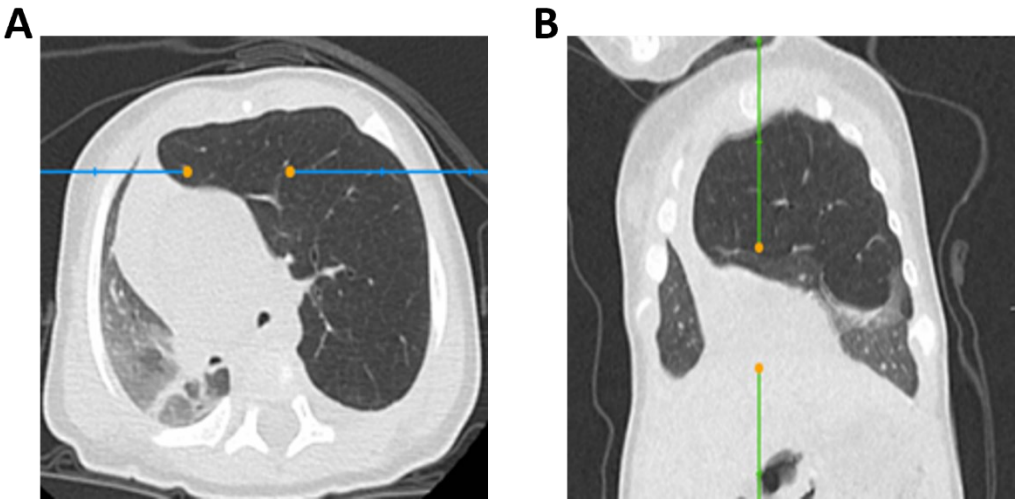

Fig. 2: CT chest axial (A) and sagittal (B) views, respectively: The left upper lobe demonstrates marked hyper-expansion with increased lucency and reduced vascular markings. The overinflated lobe herniates across the midline, resulting in a mild rightward shift of the mediastinum. No associated congenital anomalies are identified, and the overall findings are suggestive of congenital lobar emphysema involving the left upper lobe.

was otherwise feeding well and gaining weight appropriately. Such subtle signs can delay diagnosis, as CLE typically presents with more pronounced respiratory distress during the neonatal period. The infant's repeated nasal blockage may have diverted attention from the underlying lung issue, demonstrating the importance of considering lower respiratory causes in infants with persistent upper airway symptoms. Diagnostic clarity is usually achieved through imaging, which often shows an over-expanded lobe compressing surrounding lung fields. This case illustrates the broad clinical variability of CLE and underlines the necessity for clinicians to maintain a broad differential diagnosis in infants with ongoing respiratory concerns, even when they appear to be thriving. Prompt recognition can help avoid respiratory deterioration and prevent misdiagnosis of more common conditions like viral bronchiolitis.

Conclusion

Although congenital lobar emphysema (CLE) typically presents in neonates or infants under 6 months, limited data exist on the diagnostic challenges and outcomes of CLE presenting with subtle or atypical respiratory symptoms in the early postnatal period (such as 30–60 days of life). Most existing literature focuses on cases presenting with severe respiratory distress at birth or within the first few weeks. This case highlights the need for more comprehensive data on variability in symptom onset and severity in early infancy and diagnostic delays due to overlapping symptoms with other respiratory conditions (e.g., Upper respiratory tract infection, bronchiolitis, or pneumonia).

Conflict of interest

The authors declare no conflict of interest.

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