Not All Air Trapping Is Pneumothorax: A Case of Acute Respiratory Distress Post-CDH with Acquired Lobar Emphysema

Dr. Rupanagudi Tanvi, Dr. Dnyanesh Kamble, Dr. Meenakshi BR, Dr. Santosh B Kurbet, Dr. Vineeta Gautam, Dr. Kavya Kolkur
Department of Paediatrics, Jawaharlal Nehru Medical College, KLE University, Belagavi, Karnataka, India
Corresponding Author: Dr. Rupanagudi Tanvi

Abstract:- **Background: Acquired Lobar Emphysema (ALE) is a rare but serious condition in paediatrics, particularly in post-congenital diaphragmatic hernia (CDH) repair cases. ALE results in progressive overinflation of a lung lobe, leading to respiratory distress, misdiagnosis as pneumothorax, and challenges in management.**

Case Presentation: A 3-year-6-month-old male with a history of neonatal CDH repair and recent small bowel obstruction surgery presented with fever, cough, and respiratory distress. He developed respiratory failure with shock, requiring mechanical ventilation. Imaging initially suspected pneumothorax but later confirmed acquired lobar emphysema of the left lung with a mediastinal shift and right lung consolidation. Despite aggressive resuscitative efforts, the child succumbed to refractory septic shock, complicated by pulmonary hemorrhage, pneumonia, and ALE.

Conclusion: ALE should be considered in paediatric patients presenting with respiratory distress, particularly in those with a history of thoracic surgery or chronic lung disease. Timely differentiation from pneumothorax and early multidisciplinary intervention are critical for improving outcomes. Surgical approaches like lobectomy may be necessary when conservative measures fail.

INTRODUCTION

Acquired Lobar Emphysema (ALE) is a rare condition, with an estimated incidence of less than 4% among post-CDH repair patients presenting with respiratory distress[1–3]. ALE is characterized by overinflation of a single lung lobe due to air trapping, which can mimic pneumothorax, making early diagnosis challenging[4]. It is often associated with congenital lung anomalies, post-surgical changes, or chronic lung disease such as bronchopulmonary dysplasia (BPD)[5]. The condition may result in significant respiratory compromise, necessitating urgent medical and surgical intervention[6].

This report presents a case of ALE in a post-CDH repair child, initially misdiagnosed as pneumothorax, emphasizing the need for early recognition and targeted intervention.

Case Presentation

A 3-year-6-month-old male was admitted to the Paediatric Intensive Care Unit (PICU) with fever, cough, decreased activity, and rapid breathing. The child had a history of congenital diaphragmatic hernia (CDH) repair at birth and underwent small bowel obstruction surgery five months prior.

Clinical Examination and Initial Management:

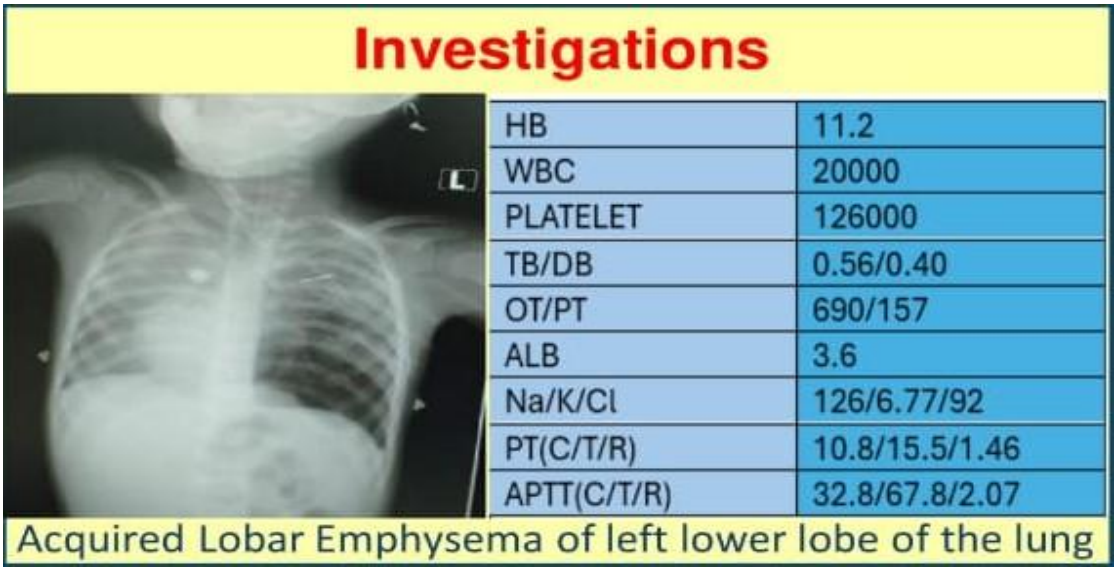
The child was in severe respiratory distress with signs of shock.

Initial stabilization included oxygen therapy, intravenous fluids, antibiotics, and inotropic support. Due to worsening respiratory failure, he was intubated and mechanically ventilated.

Imaging findings:

A chest X-ray and high-resolution CT (HRCT) scan were performed due to a strong suspicion of pneumothorax.

Imaging revealed significant hyperinflation of the left lung, causing mediastinal shift and right lung compression, with consolidation in the right lung—confirming acquired lobar emphysema instead of pneumothorax[7].



Clinical Course:

The child developed recurrent bronchospasm and worsening septic shock.Despite aggressive medical management, including broad-spectrum antibiotics, ventilatory support, and inotropic therapy, his condition deteriorated.

He succumbed to refractory septic shock with pulmonary hemorrhage, right-sided pneumonia, and ALE as contributing factors.

DISCUSSION

Acquired lobar emphysema is a rare but serious cause of respiratory distress in paediatric patients[7]. It can develop due to post-surgical airway abnormalities, chronic lung conditions, or underlying structural anomalies[8],[9]. Misdiagnosis as pneumothorax can lead to inappropriate interventions, delaying definitive treatment.

Key Learning Points:

1. Diagnostic Challenge: ALE can be mistaken for pneumothorax due to similar radiographic findings. High-resolution CT is essential for accurate diagnosis.

2. Management Complexity: Conservative management is preferred initially, but surgical lobectomy may be required if medical therapy fails.

3. Prognosis and Outcomes: ALE can result in respiratory failure and shock if not identified early, necessitating a multidisciplinary approach involving paediatrics, pulmonology, and paediatric surgery.

CONCLUSION

Acquired lobar emphysema should be considered in paediatric patients with respiratory distress and a history of thoracic surgery or lung disease. Differentiating ALE from pneumothorax is critical to prevent mismanagement. While early recognition and supportive therapy may stabilize patients, surgical intervention could be necessary in severe cases. This case underscores the importance of multidisciplinary care and timely decision-making in paediatric respiratory emergencies.

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