A Picture Says a Thousand Words

Lucent thoracic lesion in a newborn with respiratory distress

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CASE

A full-term baby girl weighing 3 kg was born to a 34-year-old mother via caesarean section. There was no significant antenatal history. Her APGAR scores were 8 at the first minute and 10 at the fifth minute.

At 15 minutes after birth, she showed signs of respiratory distress. Bubble continuous positive airway pressure was commenced. Despite high ventilation settings, she remained in respiratory distress and was intubated. A chest radiograph revealed a large, lucent, bubbly lesion occupying the anterosuperior mediastinum (Figure 1).

Figure 1. Supine anteroposterior chest radiograph showing large ‘bubbly’ mediastinal cystic lesion (white arrows) with no classical ‘spinnaker sail-sign’ to suggest pneumomediastinum.

The child was transferred to a tertiary referral centre at 29 hours of life. Clinically, she had a hyperinflated chest and was tachypnoeic. She was pink and normotensive. The lungs were normal on auscultation.

A computed tomography (CT) scan revealed a multiseptated, air-filled, cystic structure in the anterosuperior mediastinum, involving and causing mass effect to the thymus, the rest of the mediastinal structures as well as the lungs (Figure 2). Her oxygen saturation remained poor. An echocardiogram showed mild pulmonary arterial hypertension.

Intraoperatively, there was a large lobulated cystic structure in the anterior mediastinum, surrounding the thymic tissue, predominantly in the left hemithorax. A total of 40 mL of air was aspirated and 80% of the thymic gland was resected. The histopathology report revealed benign thymic tissue with loose collagenous capsule and areas of cauterized tissue lacking an epithelial lining.

Postoperatively, the child recovered well. Subsequent chest radiographs and thorax CT showed no recurrence of the lesion (Figure 3).

Figure 2. Contrast-enhanced computed tomography thorax in lung (a) and mediastinal (b) windowing showing the multiseptated mediastinal cystic pneumomediastinum (black arrows) with mass effect to the thymus (white arrows) and adjacent lungs bilaterally.

Figure 3. Repeat chest radiograph (a) and computed tomography thorax in lung window (b) postsurgery and follow up showing no evidence of residual or recurrence of the multiseptated mediastinal cystic pneumomediastinum.

DIAGNOSIS: MULTISEPTATED CYSTIC PNEUMOMEDIASTINUM

Neonatal pneumomediastinum occurs in approximately 4 to 25 per 10,000 live births (1,2). They can be spontaneous or secondary to underlying lung pathology, birth trauma, or assisted ventilation (1). Spontaneous pneumomediastinum in a term newborn is rare especially in an uneventful delivery (3). Patients may present with tachypnoea, lethargy, poor oral intake, or decreased heart sounds which are nonspecific (1).

The 'spinnaker sail-sign' on chest radiograph is frequently used to describe neonatal pneumomediastinum (1). It is caused by an upwards and outwards deviation of the thymic lobes, caused by the air in the mediastinum, separating it from the cardiac silhouette beneath (4). Most cases of neonatal pneumomediastinum show the spinnaker sail-sign, but the chest radiograph of our patient did not exhibit this classic sign.

CT thorax was able to further characterize the cystic lesion, showing a multiseptated cystic mediastinal air-filled lesion. The presence of thin walled air-filled collections raises the differential diagnosis of congenital pulmonary airway malformation or congenital lobar emphysema. The location within the mediastinum was suggestive of pneumomediastinum. Quattromani et al. and Hyun et al. reported similar cases of multiloculated multiseptated pneumomediastinum (1,5). The mediastinum is limited by a fascial band which conceals the thymus and merges with fibrous pericardium. The air dissects within the interlobular and connective tissue septa of the thymic capsule, giving rise to a multiseptated cystic appearance (1,5). The histopathological description of a cystic pneumomediastinum describes fibrovascular and fibrofatty connective tissue lacking in epithelium, similar to our case (2).

The treatment for neonatal pneumomediastinum depends on the severity of symptoms and the development of complications such as tension pneumomediastinum with tamponade, concomitant tension pneumothorax or pneumopericardium (6). Most neonates are treated conservatively, with spontaneous resorption frequently described (1–3). Low et al. performed curative surgery and excised a similar lesion because of respiratory distress in a 3-day-old infant (2). Similar to our case, the child was also intubated preoperatively.

Although challenging to diagnose, the timely recognition of spontaneous pneumomediastinum can help direct therapy and reduce morbidity associated with this condition.

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