

Neonatal Spontaneous Pneumomediastinum with Subcutaneous Emphysema

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Keypoints

What is known:

- Spontaneous pneumomediastinum occurs in about 2.5 to 1000 births and is usually associated with mechanical ventilation, invasive procedures, meconium aspiration or birth-related trauma.

What is added:

- Subcutaneous emphysema of the scalp is a rare condition. Presumably, the mediastinal air reaches the scalp, separating the galea aponeurotica from the outer table of the skull.

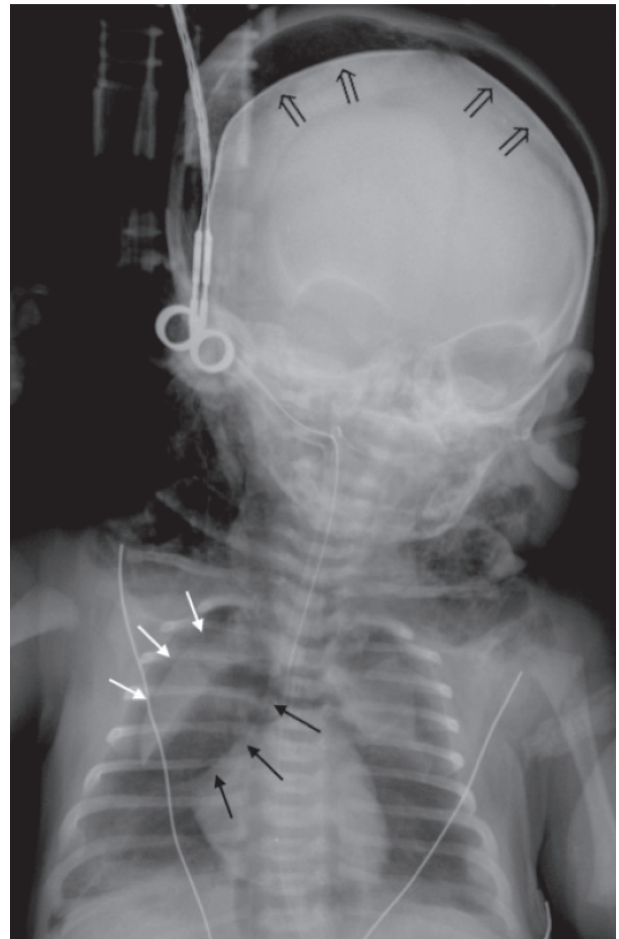
Introduction

The patient was a female infant weighing 4140 g, born by vacuum-assisted vaginal delivery at 40 weeks of gestation. She presented vigorous crying at birth and Apgar score 9 and 10 at first and fifth minutes, respectively. About 30 minutes after birth, the baby developed sudden deterioration of the clinical condition, with progressive respiratory distress and hypoxemia with oxygen saturation (SpO₂) 75% and heart rate 110 bpm, as well as progressive swelling over the neck and scalp, with snowball crepitation suggestive of subcutaneous emphysema.

She needed resuscitation maneuvers with intubation and manual ventilation. Breath sounds were decreased in the lung auscultation. Emergency air drainage with needle aspiration was performed bilaterally, which was successful and induced a quick good clinical response. Subsequently, the infant was admitted to the neonatal unit, where she was intubated and mechanically ventilated.

Radiographic examination revealed diffuse subcutaneous emphysema of the clavicular and cervical area, with extensive dissection of air along the scalp, as well as a large pneumomediastinum (Fig. 1) with the angel wing sign, also known as a spinnaker-sail sign, consisting of a wedge-shaped opacity (white arrows) representing the thymic tissue displaced from its usual location by a collection of gas under pressure (black arrows). Supportive therapy and minimal manipulation were maintained with good clinical response and elective extubation in room air for 48 hours. She started enteral nutrition on day four postpartum after a timed barium esophagogram and computed tomography

scan excluded anatomic abnormalities. Serial chest radiographs showed complete resolution. The infant was discharged home on day 11 postnatal.



Black arrows - collection of gas under pressure; double arrows - subcutaneous emphysema of scalp; white arrows - thymic tissue.

Figure 1. Radiograph showing neonatal extensive subcutaneous emphysema of scalp and pneumomediastinum.

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Pneumomediastinum occurs in about 2.5 per 1000 births,¹⁻³ with subcutaneous emphysema of the scalp being a rare condition.⁴ Presumably, the mediastinal air reaches the scalp, separating the *galea aponeurotica* from the outer table of the skull.⁴ This condition may be followed by vacuum-assisted delivery and vigorous prolonged crying of the baby.

Keywords: Infant, Newborn; Mediastinal Emphysema/complications; Mediastinal Emphysema/diagnostic imaging; Radiography; Subcutaneous Emphysema/diagnostic imaging

Author Contributions

LS participated in the study conception or design. LS and JM participated in acquisition of data. LS, MG and AG participated in the analysis or interpretation of data. LS participated in the drafting of the manuscript. JM, MG, AG participated in the critical revision of the manuscript. All authors approved the final manuscript and are accountable for all aspects of the

work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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Protection of human and animal subjects

The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki 2013).

Provenance and peer review

Not commissioned; externally peer reviewed

Confidentiality of data

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

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