

Case	(135) Incidental finding of pulmonary barotrauma in an adult, the big unknown
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CASE PRESENTATION

A 19-year-old male was admitted for having a knife wound in the left laterocervical region. He presented a carotid dissection and pseudoaneurysm of the vertebral artery, surgically repaired and stented respectively. No chest trauma was visualized on the first CT.

The patient was intubated and follow-up CT was performed 12 hours later, showing subtle linear radiolucencies in the superior lobes of lung parenchyma. 48 hours after, the CT was consistent with pulmonary interstitial emphysema (air evident within the interlobular septa and around the pulmonary veins) and pneumomediastinum due to pulmonary barotrauma. A CT examination performed one week later demonstrated a complete resolution of barotrauma findings.

DISCUSSION

Any phenomenon that increases intrapulmonary pressure or lung volume can result in pulmonary barotrauma, and although typically seen in neonates, barotrauma is a well-established complication of mechanical ventilation in other populations as well, particularly associated with the use of high peak pressures and continuous positive airway pressure.

The use of chest CT is recommended only when complications are suspected, and the findings in pulmonary barotrauma are: pneumothorax (mainly anteromedial), pneumomediastinum, subcutaneous emphysema, pulmonary bullae and pulmonary interstitial emphysema. Pulmonary interstitial emphysema (PIE) is caused by alveolar rupture with dissection of air into the bronchovascular bundles and interlobular septa.

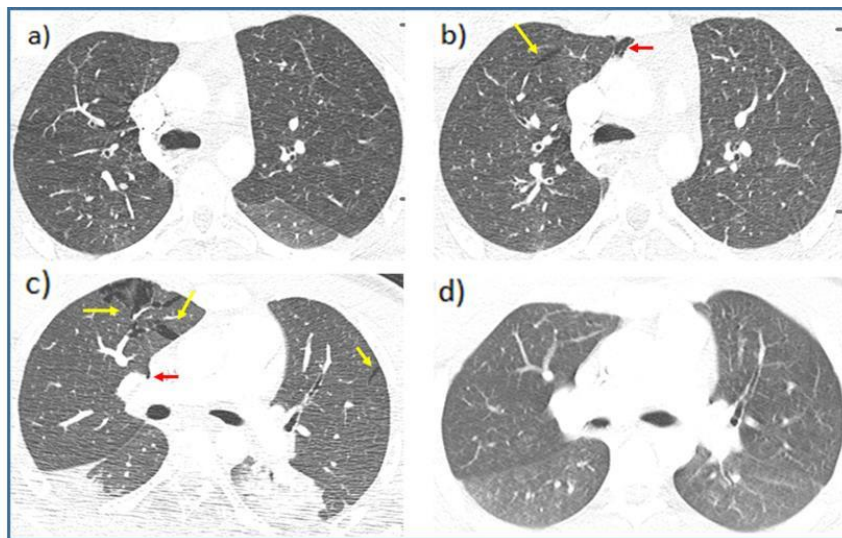
Once in the interstitium, the air follows a low-pressure gradient centrally into the mediastinum, and then to the subcutaneous tissues, pleural space, or even the retroperitoneum. As it is the initial sign of barotraumas, the early detection of PIE can prevent the development of additional, possibly fatal, complications.

As in our case, PIE is usually an incidental finding in patients with barotrauma who are being scanned for other clinical problems, being typically a transient phenomenon lasting only for several days.

CONCLUSION

Barotrauma is a well-established complication of mechanical ventilation. Most commonly seen in neonates who develop respiratory distress syndrome, PIE is a rare presentation of barotrauma in adults.

The use of chest CT is recommended in selected cases only when complications are suspected, and since PIE is the initial sign of barotraumas, the early detection on CT scan can prevent the development of possibly fatal complications.-



Pulmonary interstitial emphysema in a 19-year-old man. a) Angio-CT: upper chest included unremarkable (carotid dissection and vertebral pseudoaneurysm not included). b) 12 h follow-up CT scan (performed after endotracheal intubation) shows subtle air within interlobular septa (yellow arrow) of right upper lobe. Associated pneumomediastinum is also noted (red arrow). c) 3-days follow-up CT scan shows findings in keeping with pulmonary barotrauma: linear air within interlobular septa (yellow arrows) of both upper lobes, indicating pulmonary interstitial emphysema, and subtle pneumomediastinum (red arrow). Bibasal atelectasis are also noted. d) 7-days follow-up CT scan demonstrated a complete resolution of barotrauma findings.

BIBLIOGRAPHY

- Colby G, Cox C. Pulmonary interstitial emphysema in an adult with metastatic choriocarcinoma. Radiol Case Rep 2010; 5(4): 331-331.
- Tagliabue M, Merlini L. Computed tomography in the diagnosis of pulmonary barotrauma associated with the adult respiratory distress syndrome Radiol Med 1994; 87 (1-2):45-52.