Case	(524) Macklin effect, beyond pneumomediastinum
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CASE PRESENTATION

A 23-year-old woman arrived at the emergency room after falling from a fourth floor. She presented GCS 5, desaturation, several contusions and elbow fracture.

A chest X-ray was performed as well as a total body CT that demonstrates a left pneumothorax, atelectasis of the superior right lobe secondary to a selective intubation of the left bronchus and bilateral basal pulmonary contusions, in addition to a minimum pneumomediastinum. The head CT revealed subarachnoid haemorrhage and in the abdominal CT no abnormalities were noted.

She was admitted to the ICU. After 24 hours she presented clinical worsening, and underwent a total body CT that demonstrated pneumomediastinum, peribronchovascular interstitial emphysema in the areas of pulmonary contusion, cervical subcutaneous emphysema, and pneumoperitoneum.

DISCUSSION

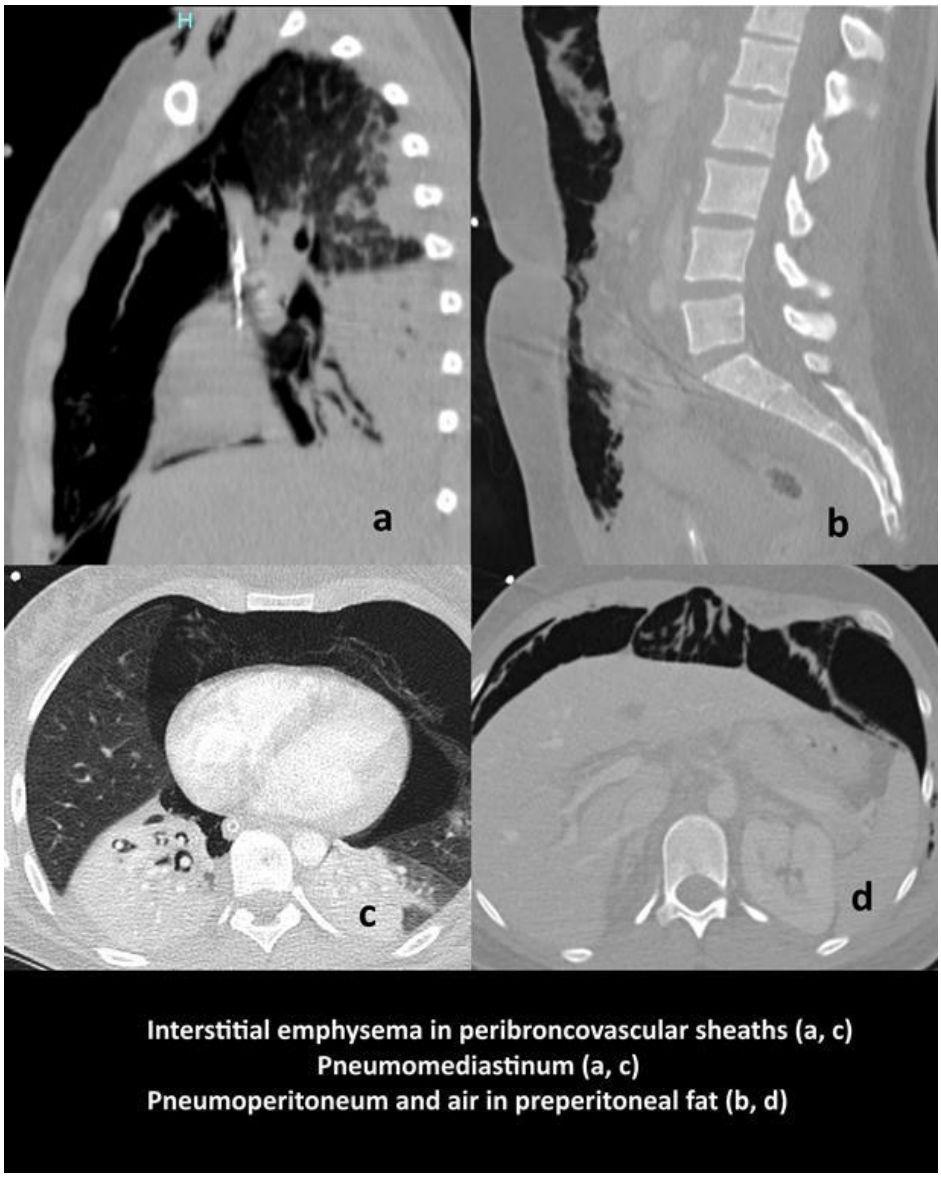
Pneumomediastinum has been reported in up to 10% of patients who underwent thoracic trauma, being less than 2% attributable to tracheobronchial or esophageal injury. (1)

Occasionally, in patients with severe thoracic trauma, pneumomediastinum, subcutaneous emphysema, and pneumoperitoneum are related and are the result of peribronchovascular interstitial emphysema. The Macklin effect explains the etiology of air leakage in up to 40% of these cases which develops due to an increase in pressure after trauma that damages the alveoli and causes the passage of air to the peribronchovascular sheaths, dissecting them and reaching the mediastinum after which, diffuses towards the retroperitoneum (in most cases), the peritoneum or to subcutaneous planes. (2, 3)

In our case, no tracheobronchial or esophageal lesion was observed. Moreover, the patient did not have any clinical or radiological data to suspect hollow visceral injury because of the fact that in patients with pneumoperitoneum due to intraabdominal injury, there is an increase in pain and abdominal distension, leukocytosis and increased CRP. In addition, a typical disposition of free fluidand air bubbles adjacent to an intestinal loop is observed on radiological tests. The absence of these findings indicates that the abdominal air has diffused from the mediastinum to stay mostly in preperitoneal fat.

CONCLUSION

It's important to know the pathophysiology of this frequent cause of pneumomediastinum in patients with thoracic trauma as well as the mechanism in which the air can spread to neighboring spaces to avoid unnecessary interventions, since the treatment of the Macklin effect is symptomatic and conservative.



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