Pulmonary Oedema: An Unusual Aetiology

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Key Words

Negative pressure pulmonary oedema · Post-obstructive pulmonary oedema

A 47-year-old man had a sudden episode of collapse whilst eating followed by a generalised tonic-clonic seizure at a restaurant. Paramedics noted central cyanosis with an oxygen saturation of 70% on room air. Bag valve mask ventilation commenced and a food bolus was dislodged from the upper airway. The patient remained drowsy and hypoxic requiring 100% oxygen. A chest radiograph (fig. 1) on admission revealed diffuse alveolar

infiltrates. His clinical condition rapidly normalised over the next few hours, and a repeat chest radiograph at 48 h was normal. Transthoracic echocardiography, renal and brain imaging were normal.

The diagnosis is most consistent with negative pressure pulmonary oedema, also known as post-obstructive pulmonary oedema. This is caused by repeated, very forceful inspiratory manoeuvres against an obstructed upper airway (Müllers manoeuvre) with resultant highly negative intra-pleural pressures. This leads to increased pulmonary capillary pressures with transudation of fluid across the capillary membrane and alveolar oedema formation [1].

Fig. 1. Admission chest radiograph.

Negative pressure pulmonary oedema appears more common in healthy young individuals, occurring most often during emergence from anaesthesia [2], with the severity of pulmonary oedema seemingly related to the severity of airway obstruction. As well as laryngospasm, near strangulation or hanging and epiglottitis are also known causes. Recognition of the condition is important, as it is usually self-limiting, resolves within 24 h and is best managed by maintaining a patent upper airway, providing supplemental oxygen and the addition of non-invasive positive pressure ventilation. Initial positive end-expiratory pressure of between 5 and 10 cm H₂O is generally sufficient [3], improving the lung compliance, oxygenation and ventilation/perfusion mismatch. These measures will largely avoid the need for further, more aggressive, and potentially harmful interventions with the use of diuretics and steroids being particularly controversial [4].

This patient's presentation raises important differential diagnoses. Aspiration and anaphylaxis must be considered given the episode of choking, and the presence of seizure activity should alert the physician to neurogenic pulmonary oedema as a rare possibility.

References

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