

# The different clinical faces of re-expansion pulmonary edema after treatment of spontaneous pneumothorax

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On first case a 37-year old male, nonsmoker without any significant medical history, was admitted due to 5-day left chest pain and dyspnea. A diagnosis of a left-sided spontaneous pneumothorax was confirmed and a chest tube was inserted (Figure 1). Almost one hour later he became dyspnoic and tachycardic and subsequent investigation revealed the presence of unilateral re-expansion pulmonary edema (REPE- Figure 2). He was given high concentration oxygen and diuretics with rapid response. On day 7, chest radiography showed resolution of the REPE and pneumothorax, and on day 10 he was discharged.

On second case a 62-year old male, smoker (15 p/y), without any significant medical history, was examined due to 4- day right chest pain, dyspnea and cough. A chest X-ray revealed the presence of a right- sided spontaneous pneumothorax and a chest tube was inserted (Figure 3). Although patient's symptoms relieved, a chest CT scan, almost three hours later, demonstrated an otherwise asymptomatic right- sided REPE (Figure 4). He received low concentration oxygen without any other intervention and his hospitalization was finally uneventfully. On day 7 he was also discharged.

REPE following re-expansion in spontaneous pneumothorax is a rare complication although the specific incidence is still under debate.<sup>1,2</sup> It's clinical severity varies from asymptomatic to life- threatening and the mortality has been estimated up to 20%.<sup>1</sup> It appears mostly unilateral.<sup>3</sup> The main risk factors are large and prolonged pneumothorax, rapid re- expansion and young age.<sup>4</sup> Pathophysiology seems multifactorial and includes the influence of low oxygen concentration and the effects of the increase in blood flow in pulmonary capillary vessels. Mechanisms such as the release of mediators like IL-8 (interleukin-8), MCP1 (monocyte chemoattractant protein 1) and leukotriene B4, the induction of oxidative stress and the loss of surfactant may cooperatively initiate the microvascular and alveolar permeability and therefore the pulmonary oedema.<sup>1,4</sup> Treatment is symptomatic but some patients may need mechanical ventilation.<sup>4,5</sup> Suction must be avoided or should be applied carefully especially with the existence of risk factors and the amount of air during drainage must be <1, 5 lit at one time.<sup>1,3,4</sup>



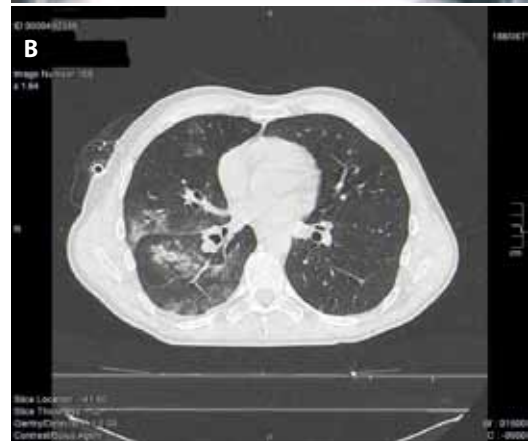
**FIGURE 1.** On admission our first patient presented with a left- sided pneumothorax.



**FIGURE 2.** Almost one hour after a unilateral pulmonary oedema was presented.



**FIGURE 3.** At initial examination our second patient presented with a right- sided pneumothorax.



**FIGURE 4.** Almost three hours later although he remained asymptomatic a unilateral pulmonary edema was presented. **A.** Chest X-ray. **B.** Chest CT scan.

### CONFLICTS OF INTEREST

All authors declare no conflicts of interest.

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