

Re-Expansion Pulmonary Edema Post-Pneumothorax

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Clinical Medical Image

A 27-year-old man was admitted to the emergency department with sudden onset dyspnea. His medical history included chronic smoking (28 packyears) and chronic cannabis use. Upon clinical examination, the patient was conscious but exhibited unstable respiratory function, with a respiratory rate of 35 breaths per minute. An initial chest X-ray revealed a large right pneumothorax. Biological tests indicated a white blood cell count of 9,000 and a C-reactive protein level of 135.

Emergency thoracic drainage was performed, and follow-up radiological monitoring showed a poorly defined alveolar opacity in the right upper lobe, along with moderate pneumothorax. A thoracic CT scan was conducted for further assessment, which demonstrated nodular and patchy intraparenchymal

areas of ground-glass opacity and pulmonary consolidation in the right lung, sparing some segments of the middle lobe and left inferior lobe, with subpleural regions involved in some areas. There was also interlobular reticulation and thickening of the septal lines, creating a "crazy paving" appearance in places. The imaging findings included a small right hydropneumothorax with an encysted scissural pneumothorax on the same side, moderate right pleural effusion with passive atelectasis of the adjacent parenchyma, and moderate pneumomediastinum. No pulmonary nodules or micronodules were detected. Additionally, significant subcutaneous emphysema was observed, extending into the bilateral cervico-axillary and right thoracic soft tissues.

These findings raise the suspicion of either pulmonary edema "a vacuo" or reexpansion edema occurring post-drainagethe

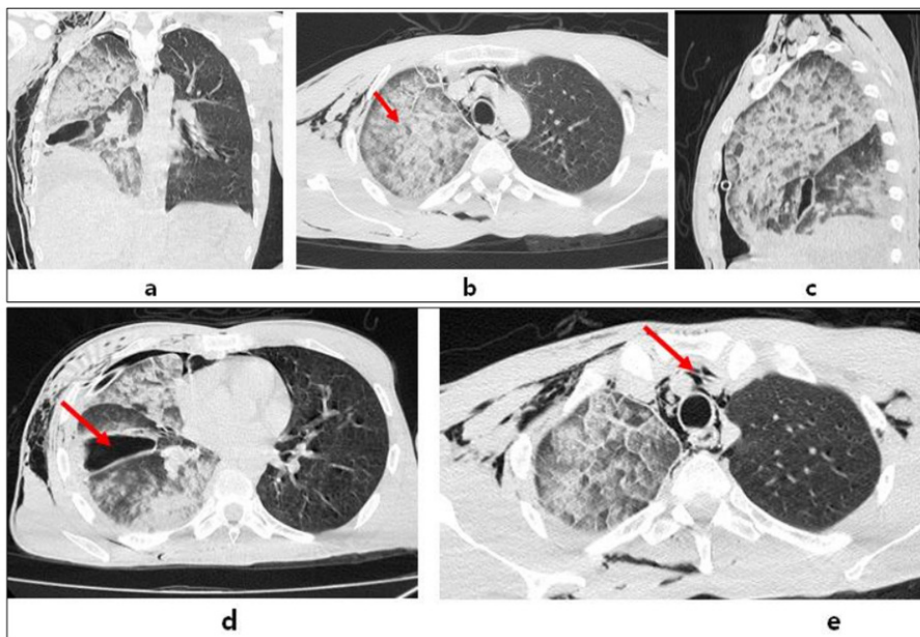


Figure 1: Thoracic angioscan, parenchymal window in axial, coronal and sagittal sections with MIP acquisition: Figures a, b and c: Nodular and patchy intraparenchymal focus of ground-glass and pulmonary condensation in the right lung hemichamber; sparing some segments of the middle lobe and LID, and the subpleural regions in places, associated with inter-lobular reticulation and thickening of the septal lines giving the appearance of crazy paving in places.

Figure d: Small right hydropneumothorax with homolateral encysted scissural pneumothorax.

Figure e: Pneumomediastinum of moderate abundance.

patient was put on oxygen therapy with reduced pleural aspiration pressure. Evolution was favorable with respiratory stability.

Re-Expansion Pulmonary Edema (REPE) is regarded as an iatrogenic complication that occurs when patients undergo rapid re-expansion of collapsed lungs, particularly following pleural effusion and pneumothorax [1].

Collapse of the lung due to pleural effusion or pneumothorax can result in histological changes, such as thickening of the pulmonary microvasculature. When the lung is re-expanded, particularly after substantial or rapid drainage, mechanical stretching can injure the pulmonary microvasculature and elevate its permeability [2].

Imaging studies may reveal ground-glass opacities or consolidations in the affected lung or in the contralateral lung, which can occur with or without respiratory symptoms [3].

References

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