Postpneumonectomy Syndrome Leading to Severe Hypoxemia Due to a Sudden Ventilation-perfusion Imbalance

Akiko Tamura, Manabu Suzuki, Akinari Tsukada and Masayuki Hojo

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Department of Respiratory Medicine, National Center for Global Health and Medicine, Japan
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Correspondence to Dr. Manabu Suzuki, manabu@nms.ac.jp
A 57-year-old woman with a history of left pneumonectomy for pleomorphic carcinoma 2 years earlier presented to the emergency room with sudden-onset dyspnea. Her SpO2 was 56%, and on chest X-ray, the right diaphragm was not visible, indicating right lower lobe atelectasis (Picture A). On a bronchoscopic examination, the distal section of the left main bronchus was sutured, which was consistent with the left pneumonectomy. However, there were no signs of visible occlusion of the airway, including cancer relapse, tracheomalacia, foreign body, or purulent sputum. Although intubation and ventilatory support did not change her conditions, after she received recruitment maneuvers, her SpO2 dramatically improved to 95%. Subsequent X-ray showed resolved atelectasis (Picture B). Computed tomography revealed a collapsed bronchus intermedius compressed by the pulmonary artery and vertebra, suggestive of postpneumonectomy syndrome (Picture C, arrow, Picture D) (1). Postpneumonectomy syndrome is a rare condition of bronchial stenosis, caused by anatomical displacement of the mediastinum following pneumonectomy. In this case, the narrow bronchus intermedius had been completely occluded by position changings, resulting in middle and lower lobe atelectasis and ventilation-perfusion imbalance. Clinicians should be aware that patients undergoing pneumonectomy can develop this syndrome as a long-term complication and that although this syndrome can present suddenly, it is reversible with recruitment maneuvers, wherein the brief application of high-level positive end-expiratory pressure (PEEP) enables reopening of collapsed alveoli and improvement of oxygenation. Furthermore, the reopened alveoli should be maintained by appropriate PEEP and positional drainage to prevent subsequent collapse.

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Reference


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