



Prolonged (continuous) prone position ventilation in a patient with a large mediastinal mass

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Abstract: We report a case of a twenty-two years old woman with a large anterior mediastinal mass admitted to the ICU with severe airway obstruction and bronchospasm after a percutaneous biopsy of the mediastinal mass and left thoracentesis. Mechanical ventilation was optimized and high dose steroid therapy, bronchodilators and sevoflurane were prescribed; severe hypoxemia persisted (PaO₂/FiO₂ 85), therefore she was ventilated in prone position. After 12 days of mechanical ventilation, of which six of them were in continuous prone position (156 h), the patient was successfully extubated. Prone position helped to treat increased airway resistance and collapse, therefore clinicians must be aware that maintenance of spontaneous ventilation and avoidance of general anesthesia are of paramount importance to prevent cardiopulmonary collapse in patients with large anterior mediastinal masses. Prolonged continuous prone position ventilation should be considered as “rescue therapy” in such cases.

Keywords: Prolonged prone position ventilation; mediastinal mass; acute respiratory distress syndrome, mechanical ventilation, transairway pressure

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Introduction

Maintenance of spontaneous ventilation and avoidance of general anesthesia are of paramount importance to prevent cardiorespiratory collapse in patients with large anterior mediastinal masses (1,2). When this is not possible, tracheal intubation and mechanical ventilation should be started. “Rescue therapy” for severe hypoxemic disease include Improve of mechanical ventilation with changes in body position, placement of a reinforced endotracheal tube distal to the obstruction, and cardiopulmonary By-pass (3-5).

Case report

Written informed consent was obtained from the patient for publication of this study and any accompanying images.

Prone position in Acute Respiratory Distress syndrome (ARDS) is standard therapy for severe hypoxemic disease.

Herein we report a case of a twenty-two years old woman with a large anterior mediastinal mass and pelerin edema who was admitted to the ICU with severe airway obstruction and bronchospasm after a percutaneous biopsy of the mediastinal mass and left thoracentesis. After tracheal intubation, pneumothorax was ruled out by chest x-ray and lung ultrasound; mechanical ventilation was optimized and high dose steroid therapy, salbutamol, ketamine and sevoflurane were prescribed; severe hypoxemia persisted (PaO₂/FiO₂ 85), therefore she was ventilated in prone position (*Figure 1*).

On day 5 after admission, pathology reported a diffuse type “B” large cell mediastinal lymphoma (*Figure 2*). Bone marrow was also infiltrated. After 12 days of mechanical ventilation, of which six of them were in prolonged continuous prone position (156 h), the patient was successfully extubated. The patient was discharged from the ICU to receive further chemotherapy.

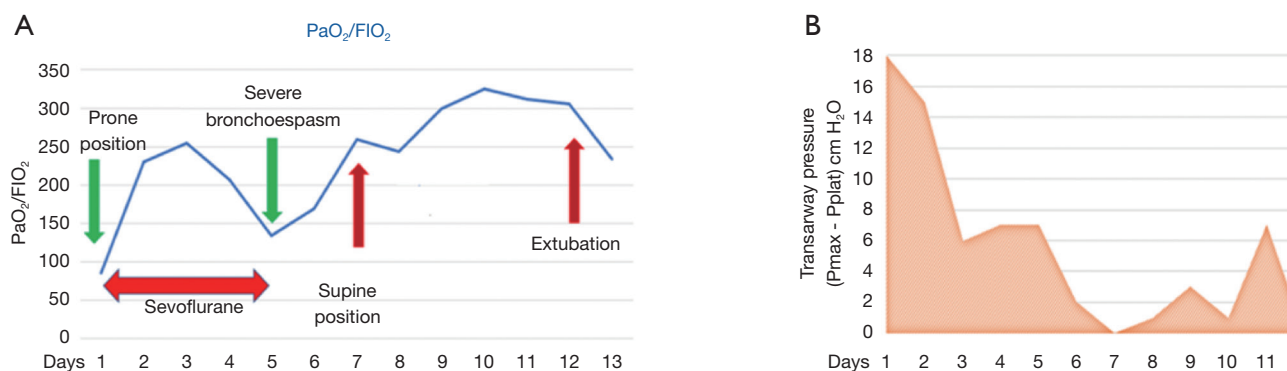


Figure 1 (A) Display of PaO₂/FiO₂ and clinical interventions, (B) Transairway pressureduring ICU length of stay.

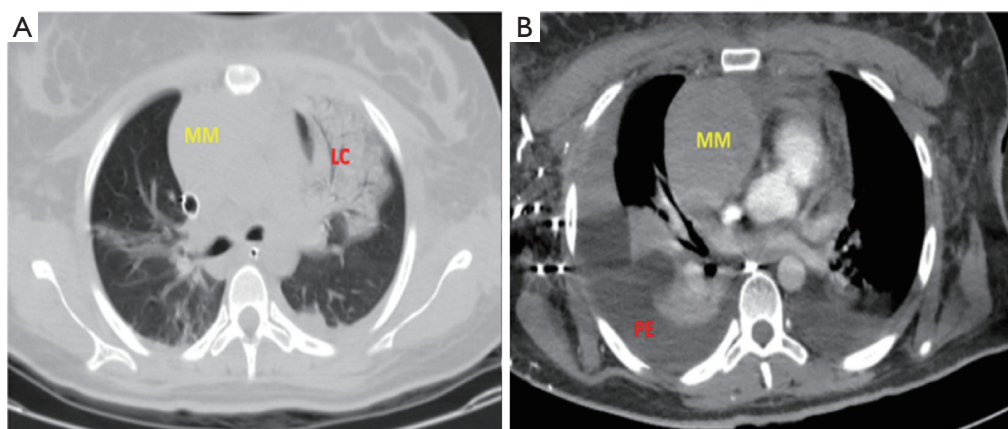


Figure 2 Chest CT. (A) Mediastinal tumor and lung consolidation. (B) Mediastinal tumor and pleural effusion.

In this patient, the anterior mediastinal mass compressed vital structures as the heart and great vessels (pericardial edema) and produced tracheobronchial deviation/compression. These anatomical deviations and the resulted physiological alterations were barely “compensated” by the patient, and were lost after the diagnostic thoracentesis and percutaneous mediastinal mass biopsy were carried out. The catastrophic complications that followed included increased airway resistance and collapse (6), with concomitant severe hypoxemia and bronchospasm (increased transairway pressure).

Although more experience is needed (7-10), continuous prolonged prone position ventilation should be added as a rescue option in patients with airway obstruction and bronchospasm secondary to large anterior mediastinal masses.

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/jxym-20-31>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional

and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this study and any accompanying images.

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