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Complicated extubation in a patient with an obstructing tracheobronchial thrombus

Abstract

Endotracheal intubation is an effective and rapid technique used as a standard practice for airway management. Airway injury or complications could be a significant cause of morbidity and mortality for patients. Tracheobronchial obstruction secondary to thrombus formation are life threatening complications of traumatic intubations. We present a case of complicated extubation resulting in cardiac arrest in a patient with an obstructing tracheobronchial thrombus. The patient, an 83-year-old female, with atrial fibrillation presented for neck pain. During CT imaging, she developed ventricular fibrillation cardiac arrest. Return of spontaneous circulation (ROSC) was achieved after three cycles of compressions and defibrillation and the patient was intubated. After stabilization of the patient and passing of spontaneous breathing trials, the patient was extubated. The patient rapidly developed hypoxic respiratory failure and progressed to pulseless electrical activity. ROSC was achieved again after 3 rounds of compressions. The following days, after passing her SBT yet again, extubation was attempted. She had an audible stridor and visible respiratory distress. Bedside Yankauer suction of the oropharynx resulted in retrieval of a large 6x2cm thrombus. Immediate resolution of stridor and improved oxygenation occurred. Tracheobronchial clots are a cause of cardiac arrest and potentially fatal cause of endotracheal intubation. Physicians and respiratory therapists must be aware of optimizing pre-extubation conditions in the setting of TB obstruction as it can lead to arrest and death.

Keywords

Endotracheal tube, clot, cardiac arrest, extubation, tracheal thrombus

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Complicated Extubation in a Patient with an Obstructing Tracheobronchial Thrombus

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Abstract

Endotracheal intubation is an effective and rapid technique used as a standard practice for airway management. Airway injury or complications could be a significant cause of morbidity and mortality for patients. Tracheobronchial obstruction secondary to thrombus formation are life threatening complications of traumatic intubations. We present a case of complicated extubation resulting in cardiac arrest in a patient with an obstructing tracheobronchial thrombus. The patient, an 83-year-old female, with atrial fibrillation presented for neck pain. During CT imaging, she developed ventricular fibrillation cardiac arrest. Return of spontaneous circulation (ROSC) was achieved after three cycles of compressions and defibrillation and the patient was intubated. After stabilization of the patient and passing of spontaneous breathing trials, the patient was extubated. The patient rapidly developed hypoxic respiratory failure and progressed to pulseless electrical activity. ROSC was achieved again after 3 rounds of compressions. The following days, after passing her SBT yet again, extubation was attempted. She had an audible stridor and visible respiratory distress. Bedside Yankauer suction of the oropharynx resulted in retrieval of a large 6x2cm thrombus. Immediate resolution of stridor and improved oxygenation occurred. Tracheobronchial clots are a cause of cardiac arrest and potentially fatal cause of endotracheal intubation. Physicians and respiratory therapists must be aware of optimizing pre-extubation conditions in the setting of TB obstruction as it can lead to arrest and death.

Keywords

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Introduction

Obstruction of the tracheobronchial airway due to a thrombus can occur in patients following trauma during intubation or pulmonary hemorrhage. This scenario can present the clinician with life threatening situations such as cardiac arrest.¹ A number of methods are used to remove clots from the lower airway, including suction, forceps

under fiberoptic bronchoscopy, a rigid bronchoscope, arterial embolectomy catheters, directed fibrinolytic drugs to the airway, and a unique suction technique developed by Bodenham which involved combining the endotracheal tube with a Y- connector using it as a suction catheter.¹⁻³ We report successful extubation of a patient who developed previous cardiac arrest consequent to a large tracheobronchial blood clot.

Case

83-year-old female with CAD, paroxysmal atrial fibrillation who presented to the hospital with neck pain and jaw pain found to be in atrial fibrillation with RVR with EKG concerning for global ischemia. Electrolytes showed hypokalemia and hypomagnesemia and she subsequently had V. fib arrest. ROSC was achieved after 3 cycles of CPR with defibrillation. She was intubated and subsequently transferred to the Cath Lab which showed significant chronic three-vessel disease with no culprit identified to explain the VF arrest. A balloon pump was placed due to cardiogenic shock and the patient was started on a heparin drip. Post procedure the patient was awake and alert and continued to remain in sinus rhythm. The patient's hemoglobin at this time was 9.4 [baseline 9]. The next day patient's hemoglobin decreased to 7.1 with no major signs of bleeding, although bloody output was noted from the subglottic region. 1 unit of blood was transfused. The heparin drip was stopped, and the balloon pump was removed. The patient continued to have bleeding from her subglottic region and was evaluated by ENT showing no clear evidence of upper airway or oropharyngeal bleeding. The patient remained stable overnight and passed her SBT the next morning. There was minimal subglottic bleeding overnight. The patient's hemoglobin remained stable. The patient was then decided to be extubated and upon removal of the endotracheal tube there was a notable clot near the end of the ET tube. The patient had difficulty expectorating and was not able to cough during the first attempt of extubation. Shortly afterwards, telemetry showed sinus tachycardia and the patient had respiratory/PEA arrest. The patient was then reintubated and underwent 3 rounds of chest compressions and received 2 doses of epinephrine. ROSC

was achieved. CXR post arrest showed diffuse right lung airspace opacity. Following this the patient was agitated overnight and had a large blood clot removed via ET tube suction. The patient continued to be alert and oriented and was started on IV Solu-Medrol prior to planned extubation. Extubation was attempted the next day for the second time with success. Initially the patient had immediate respiratory distress, an episode of emesis during extubation, followed by a period of stridor. The patient was expectorating and following commands. During expectoration efforts, using a Yankauer catheter for suction, a large [approximately 4 cm (about 1.57 in)] blood clot was removed (**Figure 1**). This resulted in immediate improvement in stridor, resolution of respiratory distress and unlabored breathing. The patient was initially placed on 6 L nasal cannula and weaned to room air shortly.

Discussion

Tracheobronchial clots causing cardiac arrest are rare complications seen after intubation and interventional airway procedures such as laryngoscopy and bronchoscopy. Multiple attempts to remove a suspected clot can lead to complications such as airway edema, bleeding, and increase in clot size due to trauma.² A number of methods are used to remove clots from the lower airway exist as mentioned above. In cases where cardiac arrest occurred more than once with achievement of ROSC through CPR, the chest cavity can be compromised. This can lead to difficulty in patient expectoration during extubation due to rib cage injury, which was seen in our case. Lower airway obstruction is a potentially fatal complication that can be seen in extubated patients. In these scenarios, the risk of developing tracheal clots must be considered as the culprit cause. ■



Figure 1. Obstructing Thrombus

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