

Caring for Patients with Spinal Cord Injuries

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The column in this issue is supplied by Juan Jose Olivero, MD, who was a nephrologist at Houston Methodist Hospital and a member of the hospital's Nephrology Training Program before his retirement in 2019. Dr. Olivero obtained his medical degree from the University of San Carlos School of Medicine in Guatemala, Central America, and completed his residency and nephrology fellowship at Baylor College of Medicine in Houston, Texas. He currently serves on the journal's editorial board and is editor of the "Points to Remember" section.

Quadriplegic patients in general have an impaired cough mechanism due to intercostal and diaphragmatic muscle dysfunction. As a result, they are at risk for aspiration pneumonia and atelectasis due mostly to accumulation of bronchial secretions. It is for this reason that aggressive respiratory care of these patients is of the utmost importance for their overall quality of life.

The following illustrates the need for immediate and thorough respiratory care and offers several points to remember when caring for quadriplegic patients.

A 32-year-old man became a quadriplegic after sustaining a gunshot wound (GSW) to the cervical spine. Following a prolonged stay in critical care, he was convalescing in the regular hospital ward when he became febrile (102°F) and tachycardic (heart rate 100/min) and developed respiratory distress.

Chest x-ray showed massive left lung atelectasis with marked mediastinal shift to the left, a tracheostomy in place, and bullet fragments in the cervical spine (Figure 1). Arterial blood gases revealed HCO₃ 24 mEq/L and respiratory acidosis (pCO₂ 58 mm Hg), resulting in acidemia (pH 7.28) and hypoxemia (PaO₂ 58 mm Hg).

While arrangements were being made to perform a bronchoscopy, the patient spontaneously coughed up an organized bronchial cast (Figure 2). Follow-up chest x-ray showed normalization of the anatomic mediastinal structure with only a mild area of post-obstructive left lung pneumonitis.

POINTS TO REMEMBER

- In a series of 243 patients who were quadriplegic due to cervical spine injury, 6 patients (5 with tracheostomies) developed severe atelectasis days to months after medical stabilization.¹

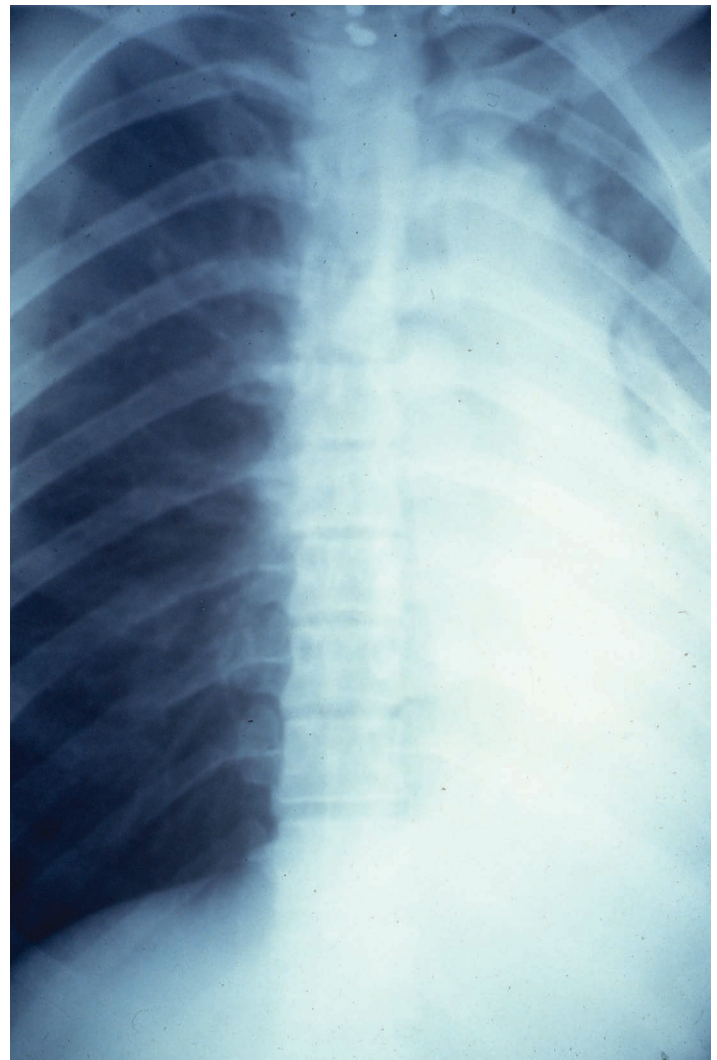


Figure 1.

Chest x-ray shows massive atelectasis of the left lung with severe mediastinal shifting to the left, a tracheostomy in place, and bullet fragments in the cervical spine.



Figure 2.
Large bronchial cast spontaneously expectorated.

- In another study of 46 quadriplegic patients, atelectasis and pneumonia occurred following acute cervical injury in 50% of them during the first 30 days post injury. The highest incidence was in those with a higher cervical injury versus lower (74% vs 33%), with left-sided atelectasis and pneumonia showing a prevalence of 4:1.²
- Prevention modalities include incentive spirometry, chest percussion, coughing, and suctioning, which are all of utmost importance to prevent atelectasis and pneumonia in these cases.¹
- Mediastinal shift can be caused by loss of pulmonary volume such as in atelectasis and after pneumonectomy, in which case the mediastinal shifting occurs in the affected area.
- Mediastinal shifting can also occur when a growing primary pathologic process pushes the mediastinum to the opposite side, as in the case of pneumothorax, large pleural effusions, or tumors.
- The treatment of choice should be directed towards the underlying etiology: for example, thoracentesis in the case of a large pleural effusion, chest tube placement for correction of pneumothorax, and vigorous pulmonary therapy, including bronchoscopy, for atelectasis and excision of tumors.
- Respiratory acidosis as well as hypoxemia result as a consequence of impaired alveolar gas exchange and usually improve with correction of the underlying pathology.

REFERENCES

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