Isolated Vocal-Cord Paralysis following Blunt Trauma to the Chest

To the Editor:

Vocal-cord paralysis without associated thoracic visceral injury after blunt trauma to the chest has not been previously recorded in the English literature. Recently a patient with left vocal-cord paralysis was seen eight days after a vehicular accident.

CASE REPORT

A 20-year-old white man sustained a concussion and compression of his chest under a truck during a vehicular accident. The initial chest roentgenogram was significant in that it demonstrated slight widening of the mediastinum, fracture of the right fifth rib, and compression fractures of the lower three thoracic vertebrae. Three days after the accident, the patient's level of consciousness had improved enough that he was conversing freely; and his father, who was a physician, noted that the patient was hoarse.

Seven days after the accident, the hoarseness originally attributed to laryngeal edema had not improved, and indirect laryngoscopic examination revealed left vocal-cord paralysis. The patient was transferred to the Milton S. Hershey Medical Center on the next day because of the suspicion of serious associated intrathoracic injury. Upon arrival the patient was alert and oriented, with stable vital signs. His hematocrit reading was 41.1 percent, and the white blood cell count was 5,000/cu mm. Indirect laryngoscopic examination confirmed left vocal-cord paralysis and the absence of direct laryngeal injury. An aortogram revealed a normal thoracic and abdominal aorta. Bronchosopic examination revealed a linear contusion with submucosal hemorrhage across the origins of both the right and left main-stem bronchi. The patient was discharged from the hospital on the day after the aortogram was taken. Eight weeks following the accident, the patient's hoarseness cleared overnight, and laryngeal examination now shows normal left vocal-cord mobility.

DISCUSSION

Following blunt trauma to the chest, the common association of potentially lethal visceral injuries with left recurrent-nerve injury should prompt vigorous diagnostic and therapeutic interventions whenever vocal-cord paralysis is detected.1-7 McBurney and Vaughan4 described a patient who had vocal-cord paralysis and a mediastinal mass persisting eight weeks after an automobile accident. At operation the patient was found to have a false aneurysm of the descending thoracic aorta just distal to the left subclavian artery. Recurrent-nerve injury should always alert one to the possibility of a thoracic aneurysm.6

Vocal-cord paralysis following blunt trauma to the chest may be temporary or permanent, depending upon the severity of the neural injury. The anatomic position of the left recurrent laryngeal nerve accounts for its injury in association with most blunt aortic transections. Surgical correction of the ruptured aorta may also result in trauma to the recurrent laryngeal nerve.8 Whether the etiology of permanent vocal-cord paralysis is related to contusion or to avulsion of the recurrent laryngeal nerve is not known; however, intermittent or temporary paralysis, as in the present case, is most certainly related to blunt compression without loss of neural continuity. The postulated mechanism of injury in the present case was compression of the tracheal bifurcation, mediastinal vasculature, and recurrent laryngeal nerve between the flexible anterior wall and the fixed posterior wall of the chest at the time of the accident. The left recurrent laryngeal nerve is relatively fixed, and contusion probably occurred during the time when the overturned truck remained across the patient's chest. The widening of the mediastinum was no doubt due to venous compression and rupture with formation of a hematoma, as the patient's face and neck showed venous suffusion when he was first admitted to the hospital. Significant visceral injury in association with injury to the recurrent laryngeal nerve has been effectively ruled out in this patient by the results of the studies performed and by the passage of time.

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