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External laryngeal trauma

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Summary

Compared to internal laryngeal trauma caused by endolaryngeal procedures, trauma to the larynx caused by external forces is relatively rare. It has an incidence of 1 in every 22,900 emergency room visits. Rapid evaluation and protection of the airway are critical. A history of a cervical trauma with signs of hoarseness, difficulty breathing and pain should always alert the emergency physician to the possibility of laryngeal injury.

Key words: larynx; trauma; hoarseness

External laryngeal trauma

In contrast to the internal trauma to the larynx caused by endolaryngeal procedures, trauma to the larynx caused by external forces is relatively rare [1]. It has an incidence of 1 in every 22,900 emergency room visits [2]. Rapid evaluation and protection of the airway are critical. The proper initial treatment will determine the final airway and voice. Symptoms of laryngeal trauma include change in the patient's voice, dysphagia, odynophagia, difficulty breathing and/or anterior neck pain. Physical examination findings are stridor, subcutaneous emphysema, haemoptysis, laryngeal tenderness, loss of thyroid cartilage prominence and ecchymosis or oedema in the overlying skin. Every emergency room physician must be familiar with the presentation of this rare injury. Keys to good outcome are early recognition, accurate evaluation, and proper treatment of such injuries [3]. In the great majority of cases external trauma to the larynx is caused by blunt pressure [1].

Case report

A 24-year-old male presented to the emergency room with mild bruises above the mandible and right side of his neck and sudden onset of hoarseness. He had suffered a compression injury getting squashed under a marble block. The side of the marble block had pressed against his mandible. He complained of mild pain over his neck and moderate difficulty in speaking. There was no difficulty in breathing. Endoscopic laryngeal examination showed laceration along the right ary-epiglottic fold, a dislocated right arytenoid cartilage and an immobile right vocal cord on phonation. The laryngeal CT revealed a comminuted fracture of the thyroid cartilage and fracture and dislocation of the cricoid cartilage (Figure 1).

The rating of roughness (R), breathiness (B), hoarseness (H) of the patient's voice was made on a reading passage. These parameters

Figure 1

Laryngeal CT.



a



b

are estimated as 0 = normal or absence of deviance, 1 = slight deviance, 2 = moderate deviance, 3 = severe deviance. The auditory analysis score of the patient's voice was R3B2H3.

The patient was tracheotomised under local anaesthesia and afterwards underwent laryngoplastic reconstructive surgery under general anaesthesia.

Discussion

The history of blunt or penetrating trauma to the anterior neck should always raise the question of laryngeal injury. Laryngeal trauma may result either from internal, endolaryngeal or external forces, the latter being more rare [1]. The larynx is protected by the mandible, the sternum, and neck flexion.

Laryngeal trauma has been classified by many authors [4–6], but since the resulting injury of the larynx is dependent on the mechanism of trauma [8], it has been recommended that the trauma should be categorised according to the underlying causes, the type and degree of injury, and its sequelae. This facilitates the understanding of laryngeal trauma, interdisciplinary communication concerning these cases, and implementation of adequate therapy leading to good treatment results [1]. Therefore, laryngeal trauma can be classified as blunt or penetrating. Blunt injury occurs, when the larynx is crushed between an object and the cervical spine. Associated arytenoid cartilage dislocation and recurrent laryngeal nerve injury can occur. Cervical spine injury and major vascular injuries must always be suspected and excluded. Penetrating injuries

usually result from gunshot or knife wounds. With any penetrating injury to the anterior neck, associated injuries to the surrounding vascular structures must be considered and evaluated [9].

Flexible fiberoptic laryngoscopy, direct laryngoscopy, bronchoscopy and oesophagoscopy can be used to determine the extent of laryngeal injury. Oesophagoscopy should be considered as an adjunct to direct laryngoscopy to further evaluate the extent of the aerodigestive tract injury and may lead to the discovery of oesophageal perforations in patients where no injury was suspected [10]. Computer tomography with fine cuts (1 mm) must be used to evaluate the larynx. The entire cervical spine, laryngeal skeleton and crico-arytenoid joints should be assessed.

Treatment is based on the site and extent of the injury. Treatment options include medical management with observation and open surgical treatment with or without stenting.

Conclusion

A history of a cervical trauma with signs of hoarseness, difficulty breathing and pain should always alert the emergency physician to the possibility of laryngeal injury.

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