Diagnostic pitfalls in sports related laryngeal injury

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Abstract

The serious nature of laryngeal trauma sustained during sporting activity can be easily overlooked. Concomitant injury should not distract from the diagnosis of potential airway problems. The effects of head and neck trauma on the airway may be delayed. The assessment and management of a patient with suspected laryngeal injury should be carried out by experienced medical practitioners.

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Every patient with a history of injury to the head, neck, or chest should be assessed for possible laryngeal injury.¹ Sports related laryngeal injury is uncommon and its diagnosis difficult.² As laryngeal trauma may precipitate delayed airways problems, it is important that

diagnosis is prompt and management effective.³ This case serves to illustrate some of the above and potential pitfalls in diagnosis.

Case report

A 33 year old man was seen as an emergency two hours after a game of football in which he suffered blunt injury to the mandible and neck. The injury was sustained by a direct blow to the left side of the jaw by an opponent's thigh during a mid air collision. He had neck and jaw pain exacerbated with movement and dysphagia. On examination, the left side of the neck was tender, particularly over the hyoid bone and ramus of the mandible. There was no crepitus, swelling, or bruising. Blood was present in the left external auditory meatus from a laceration in the canal but the eardrum was intact. He had no stridor. Radiographs of the soft tissues of the neck were unremarkable (fig 1). A radiograph of the mandible showed an undisplaced fracture at its neck on the left and a midline fracture of the body (fig 2). The patient was admitted to the hospital and spent an uneventful night. The following morning he had developed hoarseness and a short episode of dyspnoea which resolved spontaneously. Flexible nasendoscopy showed a supraglottic haematoma covering the right arytenoid cartilage causing 20% narrowing of the airway (fig 3). Repeat soft tissue x ray of the neck showed a supraglottic shadow (fig 4). Treatment was started with oral prednisolone 20 mg three times a day, analgesia, and voice rest. The patient improved over the next day and was monitored with flexible nasendoscopy for another day before being discharged with a five day course of steroids and analgesia. The fractured mandible required conservative treatment only.

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Figure 1 Normal lateral soft tissue radiograph of the neck on day of admission.

Figure 2 Radiograph of mandible with undisplaced fractures (X).

Figure 3 Endoscopic view of larynx with haematoma over the right arytenoid cartilage.

Figure 4 Soft tissue radiograph of neck. Note the outline of the supraglottic haematoma (large arrows).

Discussion

Laryngeal trauma is a potentially life threatening injury because of the ease with which the airway can be compromised. This can be immediate or delayed. In the context of non-contact sports, the attendant doctor may not realise the significance of apparently minor external head and neck injury and/or be distracted by other more symptomatic injuries. Later a patient's condition can deteriorate unexpectedly and the airways become obstructed. The above case serves to illustrate the delay between the initiating trauma and the time of maximum threat to the airway, usually in the first 24 hours after injury. Our patient did not complain of any symptoms suggestive of compromise to the airway at presentation. His dominating symptoms were related to his mandibular fracture. It is a credit to the accident and emergency team that the possibility of laryngeal trauma was realised and the patient admitted for observations. The following day he noticed dyspnoea and hoarseness suggesting a degree of compromise to the airway.⁴ This deterioration was due to inflammatory oedema. Although the radiographs of the patient's neck confirmed the presence of laryngeal injury, plain radiology is not a reliable investigation. Endoscopy, flexible and/or direct, is necessary to assess laryngeal injury. This may be combined with computed tomography or magnetic resonance imaging. The appropriate management of minor haematoma is conservative with a minimum 24 hours

observation period.⁵ The use of steroids in laryngeal injury is controversial. Some authorities use steroids routinely claiming that, by reducing the inflammatory response and the resultant oedema, the threat to the airway is reduced, and early surgical intervention, if needed, results in improved reconstruction.⁶ There has been no randomised study of their benefit in conservatively treated laryngeal injury.⁷ Steroids used early have shown benefit in the treatment of spinal cord injury presumably by limiting oedema.⁸ Whether this is relevant to laryngeal injury has not been established. The policy at our unit is to use a short course of steroids with the aim of reducing mucosal oedema. It should be emphasised that close observation and timely intervention to protect the airway are the key elements in management of less serious injury. More serious laryngeal trauma may require immediate life saving manoeuvres such as intubation or establishment of a surgical airway. Later complex reconstructive laryngeal surgery may be appropriate. The association of mandibular and laryngeal injury has been reported previously.⁹ This can mask and/or detract from diagnosis of laryngeal injury.

In conclusion, when dealing with sports related head and neck trauma, the assessing doctor must (a) have a high index of suspicion for laryngeal trauma, (b) not be distracted from diagnosing laryngeal injury by more obvious injuries, (c) be aware that the time of maximum threat to the airway may be delayed by up to 24 hours, and (d) use a systematic method of assessment and management based on the following principles: resuscitation, accurate and thorough history and physical examination, appropriate investigations, airway monitoring, and early referral to the otolaryngologists in cases of suspected laryngeal injury.

Janet Stringfellow FRCR, Senior Registrar in Radiology, interpreted the x ray findings and labelled the figures.

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Commentary

One of the tenets "carved in stone" during the proper training of an otolaryngologist is that patients with closed laryngeal injuries (usually caused by karate chops or, before the days of car seat belts, steering wheel/laryngeal deceleration impact) are always admitted for overnight observation and airway monitoring. The reason cited for this is that the airway compromising swelling may be delayed for up to 24 hours. Although this article is anecdotal and not statistically at all valid, it nonetheless provides a very well illustrated example which underlines this extremely important and inviolable standard of practice. It would, of course, be difficult to find statistically viable numbers, and unethical to do a controlled trial.

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