Bilateral recurrent laryngeal nerve palsy following blunt neck trauma

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Abstract

Blunt trauma neck to larynx is an uncommon injury that results in a wide spectrum of damage to endolaryngeal soft tissues as well as underlying cartilaginous skeleton leading to upper airway obstruction requiring emergency tracheostomy. A case report of blunt trauma neck anterior is presented who developed upper airway obstruction necessitating tracheostomy. Indirect Laryngoscopy and fibre optic examination identified vocal cord paralysis as primary cause of upper airway obstruction although X ray soft tissue neck and CT neck revealed fracture hyoid as well as hematoma surrounding the laryngeal frame work. Emergency tracheostomy was done and patient recovered uneventfully.

Keywords Blunt trauma · Vocal cord paralysis · CT neck · Tracheostomy

Introduction

Laryngotracheal trauma is a rare injury, accounting for less than one percent of the trauma seen in most major centers. Trauma can be penetrating or blunt and injury may involve cartilagenous skeleton or endolaryngeal soft tissue. The first step in trauma is establishing an adequate airway and

is the focal point of initial care of traumatized patient [1]. With Laryngotracheal injuries the airway itself is injured making this task more difficult. X-ray soft tissue neck can give fairly good idea of injury, however CT scan neck is an excellent tool to detect laryngeal skeleton injuries while as endolaryngeal soft tissue injuries can be best visualized directly by fiberoptic laryngoscopy.

Case summary

A 35-year-old male labourer presented with sudden onset respiratory distress. A quick history from the attendant revealed history of a scuffle with some person who had strangled the neck of the patient followed half hour later by difficulty in breathing which increased progressively along with noisy breathing. There had been no history suggestive of infectious etiology or of alteration in voice prior. There was no history of any foreign body. To sum up patient had been absolutely alright prior to that. On arrival in the emergency of the ENT Department he was in severe respiratory distress with stridor using all his muscles of respiration. Examination of neck revealed tenderness of neck at the level of hyoid without any surgical emphysema or bruise in the neck region. Indirect laryngoscopy revealed both cords mildly congested and immobile without any flicker, glottic chink was not appreciable. Fibre optic examination of larynx identified cords in adducted position with no movement at all. No hematoma could be visualized anywhere along the whole larynx. Bilateral recurrent laryngeal nerve palsy as a cause of respiratory distress was suspected as clinically no other cause could be attributed. Emergency tracheostomy was done. Obstruction was relieved. Once the patient stabilized emergency soft tissue X ray neck lateral view and later emergency CT neck was advised. Both showed fracture hyoid (Fig. 1a, 1b). A soft tissue shadow surrounding larynx in the region of glottis was seen on Xray later confirmed as hematoma on CT. Thyroid cartilage and cords were found normal on CT neck. Patient was continued on steroids and antibiotics. Decanulation was attempted gradually and patient recovered uneventfully

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Fig. 1 (a) X ray neck lateral view and (b) emergency CT neck showing fracture hyoid

with normal voice and without any distress. Check Xray of soft tissues of neck lateral view revealed clearance of the soft tissue shadow (hematoma) around glottis. The offending agent i. e. hematoma compressing both recurrent laryngeal nerves had resolved and neuropraxia had recovered.

Discussion

Laryngotracheal trauma is a rare injury accounting for less than 1% of trauma seen in most major centers [1]. Blunt trauma to neck usually occurs due to striking of dashboard with head and neck hyperextended or due to pedestrian accidents who sustain clothesline type injuries and also patients receiving blows to anterior neck. Blunt trauma to neck by strangulation is well known [2]. Laryngeal injury may involve lining mucosa or cartilaginous skeleton and findings include change in voice and airway quality ranging from hoarseness to aphonia and from mild to severe airway compromise [3]. However airway obstruction occurring due to palsy of both recurrent laryngeal nerves is rare with probably only one case reported in literature by Levine RJ

[4] who reports airway obstruction requiring tracheostomy due to neuropraxia following blunt trauma neck. In our case also bilateral recurrent laryngeal nerve palsy due to hematoma following blunt trauma neck warranted emergency tracheostomy. Indirect laryngoscopy has remained the mainstay of diagnosis in laryngeal trauma. Indirect examination can demonstrate vocal cord immobility, mucosal tears, endolaryngeal hematoma, arytenoids dislocation and gross distortion of lumen [3, 5]. Furthermore mucosal injury is best evaluated by endoscopy and cartilaginous injury by CT scan [2]. In our case also indirect laryngoscopy revealed immobility of vocal cords without any mucosal injury which were later confirmed by fiberoptic laryngoscopy. Soft tissue neck radiograph may confirm soft tissue injury but accurate picture of cartilaginous damage is evaluated by CT scan [3]. In our patient also soft tissue radiograph revealed fracture hyoid bone and soft tissue shadow (hematoma) in the region of glottis however CT confirmed fracture hyoid and hematoma in both paraglottic regions. With such an algorithmic evaluation with indirect laryngoscopy, fiberoptic laryngoscopy, soft tissue neck radiograph and finally CT scan we confirmed bilateral recurrent laryngeal nerve palsy due to hematoma following blunt trauma neck as cause of respiratory obstruction requiring emergency tracheostomy.

Though differences exist among authors regarding establishment of airway in acute trauma with some advocating intubation others emergency tracheostomy [2, 4, 6], we in our patient adopted emergency tracheostomy for airway establishment, with no sequelae once patient was decannulated and with restoration of normal voice.

Conclusion

Although search of literature in Pubmed identified only one case of bilateral vocal cord paralysis following blunt trauma neck with our case probably following, we conclude that rare is **“rare but it is there.”**

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