



CASE REPORT

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Penetrating neck trauma from a metal object: a late diagnosed case

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Abstract

The head and neck region contains many vital anatomical structures. Knife and gunshot wounds are the most common cause of penetrating trauma, although many objects may cause an injury with the characteristics of a stab wound. In this case, a metal object of approximately 3 cm penetrated the deep neck structures with no serious damage to neurovascular structures. The distance between the entry area and the area where the foreign body was seen caused a delay in diagnosis in the Emergency Department.

Keywords: Neck, penetrating trauma, diagnose

Introduction

The head and neck region contains vital anatomical structures such as large vessels, the larynx, trachea, cranial nerves, and medulla spinalis [1]. Rapid diagnosis and treatment of head and neck injuries is very important to prevent morbidity and mortality [2]. The therapeutic approach in neck injury is to ensure the opening of the first airway, as in every emergency. After providing vital function, surgical exploration is the most common approach [3]. A thorough physical examination and medical history are essential and radiological examination is an important guiding diagnostic tool (3-4). This trauma may originate from various tools and objects, which may frequently result in the lodging of blades, metal or wood fragments within the body [5].

In the case presented in this paper, an evaluation is made of a male patient with a penetrating neck injury caused by a metal object during garden maintenance.

Case Report

A 45-year old male patient was referred to our clinic from the Emergency Department because of a painful swelling in the neck. The patient reported being struck by something which caused a cut on his neck while mowing the grass in

the garden and had presented at the Emergency Department 5 days previously. On first presentation, it was thought to be a simple injury and the incision was sutured. After 5 days, the patient noticed increased swelling. On physical examination, Zone III was observed to be sensitive and erythematous, and palpation revealed a non-pulsatile, hard mass. On lateral radiograph, a foreign body was seen to be penetrating the neck. To locate the foreign body and assess the relationship with neurovascular structures, computed tomography (CT) was requested. The CT image of the neck showed a metal foreign body just below the corpus mandibula between the deep fibers of the SCM. Under general anesthesia, the neck was explored and the foreign body was surgically removed. A 5cm long incision was made parallel to the SCM fibres approximately 2cm below the corpus mandibula. The metal foreign body, 3 x 0.5cm in size, was excised from below the parotid tail between the SCM deep fibres (Fig.3).

After control of bleeding, the cavity was washed with rifocin and the anatomical layers were repaired as appropriate.

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Figure 1.



Figure 2.



Figure 3.



Figure 4.



Figure 5.

Discussion

The neck region includes many vital anatomic structures. The large vessels, larynx and trachea, which have many functions vital to the regulation of the initial section, are under threat when there is a spinal cord injury in the neck [1]. In 20-30% of penetrating neck trauma, larynx, trachea and esophagus injuries together with vascular injury cause significant increases in mortality rates [2].

The management of neck injuries which penetrate the platysma muscle depends on the anatomical level of the injury. The neck is divided into three regions. Zone 1 is classified as from the cricothyroid membrane as far as the thoracic inlet and injuries in this area are treated as upper thoracic injuries. Above the level of the mandible is evaluated as Zone 3 neck trauma [3].

Zone 2 comprises the area between Zone 1 and Zone 3. In this region, there may be widely-seen damage to multiple structures because of the intensity of vital structures, and this can extend the length of hospital stay [3]. In the current case, the metal foreign body was localized in Zone 2 and the foreign body was trapped between SCM fibers but the neurovascular structures were preserved.

In the first physical examination, it is important to determine whether there is any damage to complex neck structures [4]. There should be evaluation of laryngeal and tracheal damage (stridor, voice alteration, hemoptysis, subcutaneous emphysema, etc.), esophageal and pharyngeal damage (dysphagia, hemorrhagic nasogastric aspirate, bloody saliva, etc.), carotid artery injury (somnolence, hematoma, pulse absence of contralateral hemiplegia, etc.), jugular vein injury (hematoma, haemorrhage, hypotension, etc.), spinal cord and brachial plexus injury (quadriplegia, strain in the upper arm, pathological reflexes etc.), or cranial nerve injury (facial asymmetry, a change of gag reflex, tongue deviation, etc) [3]. In the current case, the absence of laryngeal and tracheal injury or cranial nerve dysfunction findings might have delayed the diagnosis of penetrating trauma in the Emergency Department.

In the algorithm for the treatment of penetrating neck trauma, the presence of hemodynamic instability, expanding hematoma, active bleeding and air leaks indicate the need for surgical exploration. If these findings are not directly seen, direct radiography, computerized tomography, observation or surgical

exploration options using imaging methods should be preferred [5]. After the physical examination, if the vital signs are stable, fiberoptic laryngeal examination must be made [6]. The sound examination gives information on the vocal cords and laryngeal nerve injury [7]. In the current case, on first presentation at the Emergency Department, as there was no evident hemodynamic instability, shortness of breath, or hoarseness, penetrating neck trauma was not considered.

In the current case, as the level of the foreign object entry hole was the left angulus mandible, it was localized in Zone 2 and was not visible on physical inspection. The distance between the entry hole and the localisation of the foreign body might complicate the diagnosis. In all patients the importance of the history and physical examination is clear. In such cases, if the foreign body does not appear near the incision, it should be kept in mind that it may have moved to a different area of the neck.

Conclusion

In all cases of penetrating neck trauma, even when there are no important symptoms in the acute period, it should be considered that the penetrating object may have moved away from the entry hole. In these cases, physical examination and history are useful as well as direct radiography and computed tomography imaging.

References

1. Belinkie SA, Russell JC, DaSilva J, Becker DR. Management of penetrating neck injuries. *J Trauma*. 1983;23:235-7.
2. Salinas N, Captain MC, Brennan JA Penetrating and Blunt Neck Trauma In: Resident Manuel Trauma to The Face Head and Neck American Academy of Otolaryngology-Head and Neck Surgery Foundation Alexandria:First Edition. 2012;164-76.
3. Varghese A. Penetrating neck injury: a case report and review of management. *Indian J Surg*. 2013;75(1):43-6.
4. Özkaptan Y, Gerek M, Akçam T. Neck injuries. In: Çelik O, Ear Nose Throat Diseases & Head and Neck Surgery İstanbul: Turgut Publishing; 2002. p.824-38
5. Balcı AE, Eren N, Eren Ş, Ülkü R Surgical treatment of tracheobronchial injuries: 14-year experience. *Eur J Cardiothorac Surg*. 2002;22:984-9.
6. Bumpous JM, Whitt PD, Ganzel TM. Penetrating injuries of the visceral compartment of the neck. *Am J Otolaryngol*. 2000;21:190-4.
7. Martin WS, Gussack GS. Pediatric penetrating head and neck trauma. *Laryngoscope*. 1990;100:1288-91.