Isolated Spinal Cord Injury Following Suicidal Stab Wound In The Anterior Neck: An Unusual Case

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Abstract

INTRODUCTION

Penetrating trauma injuries in the neck constitute 5-10% of the patients presenting in emergency. The mode of injury is mostly homicidal or accidental, but rarely suicidal. The usual cause of mortality in such cases is airway obstruction or laceration of great vessels in the neck. We report an unusual and interesting case of spinal cord transaction due to a suicidal stab wound in the anterior neck caused by a blunt kitchen knife. However, all vital structures including great vessels and aero-digestive tract were surprisingly spared by the stab injury.

CASE REPORT

A 33-year old male was admitted to our emergency center with a history of suicidal stab injury with a blunt kitchen knife on the right side of lower anterior neck one hour ago. The patient was fully conscious and narrated the history himself. He was a known schizophrenic on treatment and he attempted suicide following some altercation with the family members. Being left handed, he stabbed the right side of front of his neck. The knife got embedded in the neck and then he hit upon the butt end of the knife with his fist 5-6 times until he got the feeling of the knife entering some bone. Following this, he fell upon the ground and could not stand up. There was no complaint of dyspnoea, dysphagia, hoarseness of voice or massive bleed. The patient complained of weakness in both lower limbs. On examination, he was fully conscious with normal pulse, blood pressure and respiration. The knife was embedded on the right side of trachea in the lower neck (Fig. 1). The trachea could not be moved separate from the knife. There was mild surgical emphysema in the neck with no significant bleed. On neurological examination, motor power in both the upper limbs was normal and in the lower limbs, it was 2/5 on right side and 1/5 on left side. There was significant sensory loss below T1 level. Anal tone was normal. X-ray chest showed radio-opaque shadow in the neck with normal lung fields (Fig. 2). Urgent CT scan revealed normal great vessels and trachea deviated to the left side. The knife was reaching up to the spinal column through body of C7 vertebra injuring the adjoining spinal cord (Fig.3). After resuscitation, the neck exploration through transverse cervical incision was done. The knife was going in the right tracheo-esophageal groove sparing great vessels, trachea, esophagus, thyroid, recurrent laryngeal nerve and vagus nerve (Fig. 4). The tip of the knife was found embedded in the body of C7 vertebra and was gently disimpacted. There was no significant bleed after removal of knife. Post-operative period remained largely uneventful, except that the patient complained of persistent weakness in both lower limbs. Magnetic resonance imaging (MRI) revealed fracture of C7 vertebral body with partial transaction of spinal cord at C7/C8 level with cord swelling extending from C6 to D1 level (Fig. 5). The patient was managed conservatively and was discharged without any significant improvement in his neurological status. Nine months later, the patient is left with severe paresis of both lower limbs more on the left side.
Figure 1
Figure 1: Pre-operative photo showing kitchen knife embedded in the neck.

Figure 2
Figure 2: X-ray chest showing radio-opaque part of the knife embedded in lower neck with bilateral normal lung fields.

Figure 3
Figure 3: CT scan film showing tip of the knife reaching up to spinal column injuring the spinal cord.

Figure 4
Figure 4: Operative photo showing stab injury sparing all vital structures.
**Figure 5**

Figure 5: MRI films showing fractured body of C7 vertebra (arrow), transected cord at C7/C8 level and cord swelling extending from C6 to D1 level.

**DISCUSSION**

Penetrating trauma in the neck has been a significant cause of injury and death for centuries. The common causes of penetrating neck trauma are firearm and stab injuries. Accidental penetrating injuries are most often due to falling on sharp objects or motor vehicle accidents. Stab injuries can damage one or more of the major organ systems of the neck including great vessels, nerves, larynx, trachea, esophagus and spinal column. The reported mortality in such cases is 7%. Stab injuries in the neck leading to spinal cord trauma are rare and the literature on the subject is scanty. Most reported cases of spinal cord injury following a stab in the neck are homicidal, and the injury site is either the back or lateral side of the neck. It is even rarer to have a stab injury in the neck in connection with suicide. In a twenty year study of suicide cases, only 0.56% cases (18/3182) died of stab injuries in the neck. In suicidal injuries, stab wounds are usually inflicted in the anterior neck and injury to great vessels and/or injury to aero-digestive tract is the cause of mortality. Suicidal stab injuries in the anterior neck causing isolated spinal cord transaction and sparing all major and minor structures coming in the way is unimaginable and to our knowledge, no such case has been reported in literature. In the present case, spinal cord injury was suspected on the basis of symptoms of lower limb weakness and signs of neurological deficit, and was confirmed on CT scan. MRI only helped in final assessment of cord damage. The presence of cord swelling following trauma as seen in our case, usually indicates a poor prognosis. In conclusion, the present case highlights that isolated spinal cord injuries are possible following the anterior cervical suicidal wounds. It also reiterates the importance of performing detailed secondary survey after stabilization of airway, breathing and circulation as mentioned in advanced trauma and life support (ATLS) guidelines given by American College of Surgeons that possibly helped in the pre-operative detection of spinal cord injury in this case.

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