INTRODUCTION

Craniocervical firearm injuries are less common compared to other parts of body.1 Firearm injuries to the upper cervical spine involving the spinal cord are usually fatal. The firearm damage of the upper cervical spine without neurological deficit occurs very infrequently.2 Spinal cord may be damaged by spinal cord transection, contusion, or ischemia due to vascular injury.3 The extent of tissue damage in gunshot wounds depends on the distance at which the gun is fired, missile track, and bullet structure, size and velocity.

Cervical spine injuries may have concomitant digestive tract (pharyngeal, esophageal), airway (laryngeal, tracheal) or vascular injuries, which need initial resuscitative measures to secure airway and maintain breathing and circulation.

The purpose of this case report is to report possibility of survival in high cervical spine injury and unusual neurological deficit.

CASE REPORT

An 8 years old boy suddenly fell down while fetching water from hand pump and became unconscious. After few hours, he regained consciousness but was unable to move the right side of body. He also complained of neck pain. There was no history of fever or trauma.

On examination, he was conscious and oriented. His speech was normal. Cranial nerves were intact. Power on right side of body was grade 0. Touch sensation was impaired on same side and pain and temperature decreased on the contralateral side. Tone and reflexes were decreased on right side. Examination of nape of neck revealed a lacerated wound one centimeter in diameter slightly lateral to midline on right side. There was CSF discharge from the wound.

Radiograph of cervical spine showed a bullet lying in the spinal canal on right side. CT scans of the upper cervical spine also confirmed bullet on the right side underneath the C1 and C2 laminae.

Patient was operated in prone position with midline suboccipital incision. Laminectomy of atlas and axis vertebrae was performed and dura opened in the midline. Bullet was visible in right extramedullary intradural space entangled between nerve roots and compressing the cord. Bullet was carefully removed. Dura was closed in a water tight manner. Wound closed back in layers.

Postoperatively, patient improved neurologically and regained some power in the right lower limb next day of operation, CSF discharge stopped postoperatively as well. Stitches were removed on 8th day. Patient was discharged.

ABSTRACT

A case of stray bullet injury in a child is reported who presented with Brown-Sequard syndrome and CSF leak from the wound at the nape of neck. Patient was assessed by plain radiography and CT scans showing bullet lying in the cervical spinal canal under the C1 and C2 laminae. Laminectomy at C1/C2 level was done and bullet was carefully removed. Patient improved neurologically and CSF discharge stopped. The case report indicated the atypical neurological presentation and possibility of survival in high cervical spinal firearm injury.

Key words: Cervical spine. Spinal injury. Brown-Sequard syndrome. Firearm injuries.

Figure 1: Lateral view of cervical spine showing bullet lying in the cervical canal beneath the C1 and C2 laminae.

Figure 2: C.T. scan of upper cervical spine showing bullet with metallic artifact on the right side beneath the C2 lamina.
DISCUSSION

After vehicular trauma, gunshot wound is one of the commonest causes of spinal cord injuries. Injuries to the thoracic region of the spine are the most common, followed by the thoracolumbar area and the cervical spine.4

Penetrating injuries due to gunshot can lead to spinal cord transection or contusion. Neurological injury can occur even if the projectile does not penetrate the spinal canal. It is most probably the result of the kinetic energy transmitted by the projectile.5 Gunshot injuries to the cervical spine may cause immediate death, quadriplegia, Brown-Sequard syndrome,6 or cruciate paralysis.7 Injury to the cervical spine without neurological deficit occurs very infrequently.2 Reported case presented with hemiplegia and sensory loss on the same side of body and pain and temperature sensation impairment on the opposite side. These features were consistent with Brown-Sequard syndrome.

Approach to the upper cervical spine for firearm injuries depend upon the location of the missile. Four cases of gunshot fragments involving the anterior elements of C1 and C2 were presented by Mangiardi.8 In these cases, the fragments were removed via a transoral approach. In this case posterior approach was adopted as the bullet lay beneath the C1 and C2 laminae.

Surgical intervention is not always essential for spinal gunshot injury; however, it may be beneficial for patients with CSF fistula, infectious and compressing foreign bodies in the injury site, instability, and rapid neurological deterioration.9,10 Retained bullets rarely cause problems of delayed infection, late neurological decline, or lead toxicity, eliminating the need for prophylactic bullet removal; however, in the thoracolumbar spine, removal of bullet fragments lodged within the spinal canal has been shown to significantly improve neurological recovery.11 Kupcha and colleagues, also retrospectively reviewed 28 patients with low-velocity gunshot wounds to the cervical spine and recommended selective wound management and observation of retained bullet fragments in the spinal canal in patients with complete quadriplegia.12

In the reported case, bullet was removed from the upper cervical because there was CSF leak and partial neurological deficit (Brown-Sequard syndrome). Neurological improvement was observed in the immediate postoperative period. CSF discharge stopped and there was no infective complication.

REFERENCES


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