Unique Case of Glass Piece Injury to Cervical Spinal Cord: A Very Rare Presentation

ABSTRACT

Foreign bodies inside the cervical spinal canal causing injury to spinal cord are seen very rarely. Very few cases of glass fragments in the cervical spinal canal were reported till date. In this report, a 17-year-old boy, who was accidentally injured by a glass piece, which penetrated into the cervical spinal cord, was operated upon and, he recovered dramatically. This case report is to emphasize the morbidity caused by small foreign bodies accidentally introduced by trivial injuries.

Keywords: Cervical spinal cord, Glass piece, Intraspinal foreign body, Quadriplegia.

INTRODUCTION

Penetrating injuries to spinal cord are a rare presentation and commonly occur due to missile injuries, a sharp knife, or a needle, especially in the dorsolumbar region. Injury to cervical spinal cord by glass piece is very rare.1,2 There are only a few cases reported about glass fragments in spinal canal.3,4 This is a unique case of cervical cord injury by a broken glass piece in situ causing quadriplegia. Later on after intervention, he shows signs of remarkable recovery.

CASE REPORT

A 17-year-old boy was admitted with an alleged history of accidental injury by a glass piece on the left side of the neck and presented with complaints of weakness in both upper limbs and inability to use both lower limbs. The boy attempted to dive into the river from a height of 5 feet. He accidentally fell onto the sides of the river bank. The river bank was full of broken glass bottles. The boy was injured on the left side of the neck. He was conscious and there was bleeding through the punctured wound on the left side of the nape of neck.

He was found by a passerby and was then taken to a nearby hospital, where the wound was checked for any external glass pieces. As there were no glass pieces externally, suturing was done, and bleeding was arrested. As the boy complained of progressive weakness and sensory loss in the limbs, he was referred to a higher center for further management.

On admission, he was fully conscious and was complaining of severe pain in the neck with restricted neck movements. He experienced quadriplegia with weakness more in the lower limbs than the upper limbs. His vitals were stable.

Neurological Examination

<table>
<thead>
<tr>
<th></th>
<th>Right upper limb</th>
<th>Left upper limb</th>
<th>Right lower limb</th>
<th>Left lower limb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>4/5</td>
<td>4/5</td>
<td>0/5</td>
<td>3/5</td>
</tr>
<tr>
<td>Hand grip</td>
<td></td>
<td>0</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Deep tendon reflex</td>
<td>+</td>
<td>+</td>
<td>Absent</td>
<td>+</td>
</tr>
<tr>
<td>Sensation</td>
<td>Intact</td>
<td>Intact</td>
<td>–</td>
<td>No response</td>
</tr>
<tr>
<td>Plantar reflex</td>
<td>–</td>
<td>–</td>
<td>Lost L1 down</td>
<td>Lost L3 down</td>
</tr>
</tbody>
</table>

Computed tomography (CT) of the cervical spine showed the following:
- Linear foreign body piercing the spinal cord from left to right with consistency of glass rod (Fig. 1).
- Site of entry is C4–C5 interlaminar space in the posterolateral region (Fig. 2).

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References:
1. Senior Assistant Professor, 2 Assistant Professor, 3 Senior Resident
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3 Department of Emergency Medicine, Meenakshi Mission Hospital & Research Centre, Madurai, Tamil Nadu, India
• Emergency surgery was planned and taken up for exploration of the wound.

PROCEDURE
• Under General anesthesia, through posterior approach, C2–C6 laminae were exposed.
• A linear, triangular, flat, sharp glass piece was found piercing the dura in C4–C5 interlaminar space from left to right (Fig. 3).
• He underwent C4–C5 laminectomy and the glass piece was meticulously removed. The glass piece was seen piercing the dura on the posterolateral aspect and penetrating the spinal cord (Fig. 4). There was cerebrospinal fluid leak through the dural rent but no active bleeding was seen. The dural rent was repaired using 4-0 silk and muscle patch.
• There were no untoward events during surgery and the cord was seen pulsating normally.

After surgery, the patient’s general condition improved, and the neurological status remained the same. He has not deteriorated. He was ventilated and weaned off slowly from the ventilator on the 8th POD and showed progressive improvement in neurological status.

Postoperative Neurological Status

<table>
<thead>
<tr>
<th></th>
<th>Right upper limb</th>
<th>Left upper limb</th>
<th>Right lower limb</th>
<th>Left lower limb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>5/5</td>
<td>5/5</td>
<td>1/5</td>
<td>5/5</td>
</tr>
<tr>
<td>Handgrip</td>
<td>0</td>
<td>75%</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Reflexes</td>
<td>+</td>
<td>+</td>
<td>absent</td>
<td>+</td>
</tr>
<tr>
<td>Sensation</td>
<td>Intact</td>
<td>Intact</td>
<td>Intact</td>
<td>Intact</td>
</tr>
<tr>
<td>Plantar reflex</td>
<td>–</td>
<td>–</td>
<td>No response</td>
<td>Flexor</td>
</tr>
</tbody>
</table>

He was discharged on the 18th POD with advice for physiotherapy.

DISCUSSION

Penetrating injuries of the spinal cord are relatively rare. Most of the penetrating injuries are caused by missiles and rarely due to glass or wood fragments. Majority of penetrating injuries to the spinal cord occur in the dorsal and lumbar regions and extremely rarely in the cervical spinal cord.

In the United States, only 1% of spinal cord injuries are attributed to stab wounds. In a large review published from South Africa, 25% of the spinal cord injuries are due to stab wounds, mainly in the dorsolumbar region.

Usually, penetrating injuries of the spinal cord result in broadly separated clinical features, such as silent neurological presentation to gross and permanent neurological deficits. In missile injuries, there is a possibility of a high percentage (80%) of complete...
injuries. Lipschitz suggested that neurological recovery is rare with neurologically complete injuries over 24 hours after injury. Surgery in these cases is indicated immediately to prevent neurological deterioration and cerebrospinal fluid leak. Very rarely, a foreign body may remain silent after penetrating injuries of the spine and the patient may become symptomatic in later years of life because of migration (or) infection.

The clinical picture of intraspinal foreign bodies includes sensory motor deficits, CSF fistulas, meningitis, and subarachnoid hemorrhage. Plain radiograph and CT scan are the investigation of choice in case of metallic and glass fragments. Magnetic resonance imaging can cause damage if the foreign body is metallic in nature.

In our case, it is a retained glass piece (Fig. 5) with no evidence of foreign body at the site of entry. Tomography revealed in situ glass piece piercing the cervical spinal cord. After surgical removal of the foreign body, the patient showed dramatic neurological improvement by way of improved motor function, intact sensation, and intact bladder and bowel activity.

REFERENCES