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THORACIC SPINE MIDLINE INJURY WITHOUT MOTOR DEFICIT AFTER STABBING

BIÇAKLANMA SONRASI MOTOR DEFİSİT GELİŞMEYEN DORSAL SPİNAL ORTA HAT YARALANMASI

Mehmet Hakan SEYİTHANOĞLU[1], Kazım DOĞAN[2], Meliha GÜNDAĞ[3], Tolga Turan DÜNDAR[4], Enes AKKAYA[4], Hakan HANIMOĞLU[1], Mehmet Yaşar KAYNAR[5]

[1]Assist. Prof. Dr., Neurology Specialist, Bezmialem Foundation University, Medical School, Neurosurgery Department, İstanbul,
[2]Neurology Specialist, Ardahan State Hospital, Neurosurgery Department, Ardahan,
[3]Neurology Specialist, Bezmialem Foundation University, Medical School, Neurosurgery Department, İstanbul,
[4]Research Assistant, Bezmialem Foundation University, Medical School, Neurosurgery Department, İstanbul,
[4]Prof. Dr., Neurology Specialist, Bezmialem Foundation University, Medical School, Neurosurgery Department, İstanbul,

Address: Op. Dr. Kazım Doğan, Ardahan Devlet Hastanesi, Merkez/Ardahan
Tel.: 0505 8025983
E-mail: drkdogan@yahoo.com
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SUMMARY:

Spinal cord injuries after stabbing are rare, and incomplete neurological motor deficits occur in most cases due to a partial incision. In this case report, we describe a 32-year-old man who presented in our emergency department with a stabbing in the mid-thoracic region that crossed the spinal cord and spine. The knife entered approximately 13 cm from the D7 vertebral level to the parallel vertical axis, perforated the spinal cord, and stopped along the anterior posterior axis of the corpus AP. The knife approached the mediastinal aorta within a few millimeters, but did not cause any vascular injury. There was no motor deficit due to the knife passing parallel to the vertical axis of the spinal cord from the midline. After T7 laminectomy, the knife was removed and posterior dura repair was performed. After surgery the patient left hospital with mild dysesthesia, and no motor deficit was present. In most of these injuries, different degrees of motor deficit develop. If the input angle and the direction of the knife are parallel to the vertical axis, minimal motor deficit occurs. This case is encouraging for cases of midline myelotomy.

Key Words: Penetrating injury; spinal cord injury; surgical treatment

Level of Evidence: Case report, Level IV

ÖZET:

Bıçaklanma sonrası omurilik yaralanmaları nadir olup, çoğunda spinal kordun kısmi kesisine bağlı olarak inkomplet nörolojik motor defisit oluşmaktadır. Sunulan olguda 32 yaşında erkek hasta, sırtında orta torakal bölgeden, spinal kordu ve omurgayı çaprazlayan bıçaklanma sonrası acil servise geldi. Bıçak T-7 seviyesinden vertikal eksene paralel orta hattan yaklaşık 13 cm girerek spinal kordu orta hattan delmiş ve korpus AP ekseni boyunca ilerleyip durmuştu. Mediastinal aortaya birkaç mm kadar yaklaşan bıçak herhangi bir vasküler yaralanmaya sebep olmamıştı. Orta hattan spinal kordu vertikal eksene paralel geçen bıçaktan dolayı motor defisit gelişmediği belirlendi. T-7 laminektomi sonrası bıçak alındıktan sonra posterior primer dura tamiri yapılan hasta hafif dizestezileri dışında motor defisitsiz olarak taburcu edildi. Bu tip bıçakla yaralanmaların tamamına yakınında değişik derecelerde motor defisit gelişmektedir. Bıçağın giriş açısı ve yönü vertikal eksene paralel olduğunda defisit daha az olabilmektedir. Bu durum orta hat myelotomiler için cesaret vericidir.

Anahtar Kelimeler: Delici yaralanma, omurilik yaralanması, cerrahi tedavi.

Kanıt Düzeyi: Olgu Sunumu, Düzey IV.

INTRODUCTION:

Injuries of the spinal cord due to stabbing are quite rare, and incomplete neurological deficit occurs in most cases due to partial incision of the spinal cord[7]. In this case, although the knife passed through all the layers of the spinal cord from the midline, no motor deficit was observed, due to the parallel entrance of the knife to the vertical axis in the axonal dimension. This situation partially enlightens issues of medial myelotomy.

CASE PRESENTATION:

A 32-year-old male patient stabbed in the back was admitted to the emergency department. A 16 cm bread knife entered at the T7 level from the posterior midline, with 3 cm remaining to the haft (Figure-1). The patient was drunk and his perception was blurred. There were no motor deficits in the extremities of the patient, who was hemodynamically stable. In a thoracic vertebral computerized tomography (CT) evaluation, the knife was seen to pass from the midline of the T7 lamina near to the center of the spinal cord, and to move along the bone until the corpus anterior surface.

It was observed that the knife did not cause any damage to the mediastinal aorta (Figure-2). The patient, who received emergency surgery, was placed in a prone position. The entry site was expanded and the incision was enlarged. Posterior right hemilaminectomy was performed and the entry of the object to the spinal cord was observed (Figure-3). The knife was removed and the posterior dura was sutured. In a neurological examination on the first day after surgery, there was no motor deficit in the lower extremities.

Figure-1. The patient in the emergency department, showing a stabbing at the T7 level.

Figure-2. The shape of the knife entry in thoracic vertebral CT.

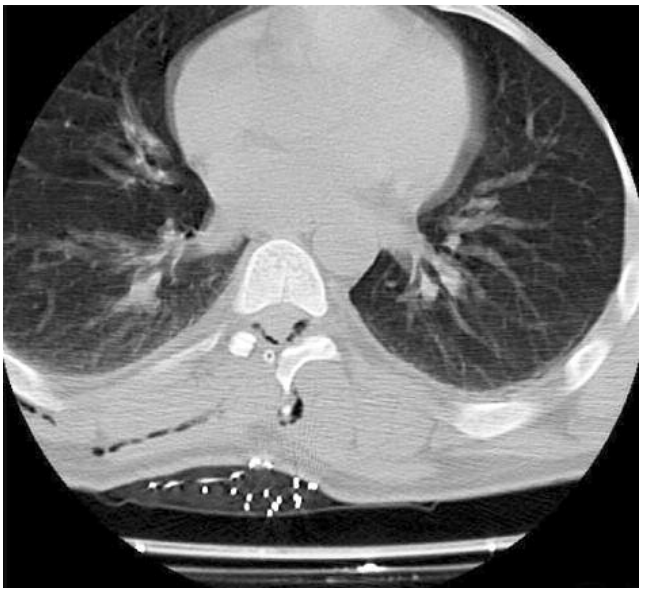

Figure-3. The entry site of the knife in the cord after right T7 hemi-laminectomy in a thoracic vertebral CT.

Figure-4. The trace of the knife observed in a dorsal spinal MRI axial section taken on day 5 after surgery.

Hypoesthesia at the right T9–12 level and an increase in superficial touch and vibration sense at the same level were detected. In dorsal Magnetic Resonance Imaging (MRI) on day 5, a trace of the object and the damage to the spinal cord could be observed (Figure-4). The patient was mobilized on day 3 and discharged the next day.

DISCUSSION:

Injuries to the spinal cord due to stabbing are usually isolated and rare[8,10], and these injuries are rarely seen in more economically developed countries, although the frequency among teenagers in South Africa is high[7]. Acute urological deficit often occurs after injuries in the dorsal region. This deficit can develop directly due to penetration, or can develop after vascular situations such as spinal infarction and epidural hematoma. In patients with direct penetration to the spinal cord, incomplete damage, such as Brown-Sequard types, often occur[2,4-5]. In this case, the knife entered the spinal cord and passed through all layers. Despite this, there was no motor deficit in the patient. It was thought that the entry angle of the object, parallel to the long axis of the spinal axis, reduced the damage to the spinal cord.

Lesions such as infarction or hematoma increasing the secondary damage to the spinal cord were not observed. Generally, cord infarctions are seen in the lower dorsal and lumbar region when the Adamkiewicz artery is injured[1].

In the case of hypotension caused by trauma, infarction formation can speed up. Spinal epidural hematoma is one of the rare complications that can be seen after stabbing[6].

Although a direct X-ray is important to show the foreign object in the spinal region, a spinal CT is more valuable for evaluation of the spinal canal and bone structures, despite artifacts. MRI should be preferred to evaluate infarction or hematoma[1,5,8].

If there is neurological deficit, fragments in the spinal canal should be surgically removed[9]. If there is no deficit, the situation is controversial and a decision regarding surgery should be made. If there is a BOS fistula, surgical repair should be performed because of infection[3-4].

A functional recovery of about 50–60% has been observed in spinal stab injuries. The prognosis is generally better than for firearm and blunt spinal cord injuries. The spinal injury in cases of stabbing is generally incomplete[4,6].

In conclusion, although injuries that penetrate the spinal cord are incomplete, they generally cause neurological deficit. Here, the damage of the knife to the neural tissue was minimal, because the entry angle of the knife was parallel to the vertical medial myelotomy incision. Vertical bifurcation of all of the layers of the spinal cord does not create any problems in terms of motor deficit. This situation is encouraging for cases of midline myelotomy.

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