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Case Report

Post-Traumatic C7-T1 Spondyloptosis in a Patient without Neurological Deficit: A Case Report

Bir Hastada Travma Sonrası Nörolojik Defisit Olmadan Gelişen C7-T1 Spondilopitoz: Olgu Sunumu

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ABSTRACT

Traumatic cervical spondyloptosis has almost always been associated with disabling neurological deficit and we could only find one case without a neurological deficit reported in the literature. A 42 year old man suffering from severe neck pain following a high speed motor vehicle accident was admitted to our hospital. Magnetic resonance imaging (MRI) and computerized tomography (CT) of the cervical spine and neurologic examination of the patient were performed. The patient was treated with three-column fixation of the traumatic level. We aimed to report a unique case of traumatic C7-T1 total spondyloptosis without a neurological deficit and discuss possible mechanisms and treatment modalities.

KEYWORDS: Cervical spondyloptosis, Spinal fusion, Spinal trauma, Neurological deficit

ÖZ

Travmatik servikal spondilopitoz nadir bir patolojidir ve hemen her zaman ağır nörolojik defisit ile birliktedir. Literatürde nörolojik defisiti olmayan sadece bir vaka bulabildik. Yüksek hızlı motorlu taşıt kazasını takiben şiddetli boyun ağrısı şikayeti olan 42 yaşındaki erkek hasta hastanemize kabul edildikten sonra hastanın nörolojik muayenesi yapılarak servikal bölgenin bilgisayarlı tomografisi ve manyetik resonans görüntülemesi yapıldı. Ardından hasta travmaya uğrayan seviyenin üç kolon sabitlemesi yapılarak tedavi edildi. Biz burada nörolojik defisiti olmayan C7-T1 spondilopitozisli bir hastayı sunmayı ve olası mekanizmaları ve tedavi seçeneklerini tartışmak istedik.

ANAHTAR SÖZCÜKLER: Servikal spondilopitoz, Spinal füzyon, Spinal travma, Nörolojik defisit

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CASE REPORT

A 42-year-old man who had a high-speed motor vehicle accident was admitted to our hospital.

On admission he was conscious and had no neurological deficit. He was only suffering from intense neck pain.

Plain roentgenograms of the cervical spine failed to show malalignment of the vertebra, but computerized tomography (CT) imaging showed C7-T1 dislocation and C6-C7-T1 laminae and lateral mass fractures. Magnetic resonance imaging (MRI) revealed total spondyloptosis at C7-T1 level with the body of the C7 vertebra lying almost totally in front of the T1 vertebra without compression of the spinal cord (Figure 1).

The patient was placed on skull traction and serial x-ray scans were obtained each day. At the end of the 5th day, correction of the spinal alignment was observed at C7-T1 level. The patient was operated upon in the supine position following fiber optic intubation and with skull traction in place, on the sixth day. The cervical spine was exposed by a standard right sided transverse anterior cervical incision. A C7-T1 discectomy and anterior fusion using a peek cage (Stryker Implants, France) integrated with allograft were performed and a titanium plate (Stryker Implants, France) was inserted. After radiographic examination, we proceeded to suture drainage in situ.

Although cervical alignment was achieved, we performed a posterior surgical approach at another session, three days after the first operation. The patient was operated on in the prone position under general anesthesia and the cervical spine was exposed by cervical midline incision. Posterior stabilization between C4-T3 was performed by C4-C5 lateral mass and T2-T3 transpedicular screw fixation and rod constructs due to the lamina and lateral mass fractures at C6, C7, and T1 (Stryker Implants, France). Postoperative MRI and lateral and anterior-posterior X-rays showed the excellent realignment (Figure 2 and Figure 3 A,B).

The postoperative period was uneventful and there were no operation-related complications. Rigid cervical orthosis was used in the postoperative period. The patient was mobilized on the 3rd day, and the postoperative hospitalization was 10 days. The follow up examination of the patient revealed no neurological deficit.

DISCUSSION

Shekhar et al described the first spondyloptosis of the cervical spine at C6-7 level with late-onset cord compression, in 1992 (18). The etiology in this case was declared to be post-traumatic, subsequent to a significant birth trauma. Before their case, 10 more similar cases (2,5) with spondylolisthesis and spondylolysis of the cervical spine had been reported in the literature (5,3,7,14) and all were treated either conservatively or by posterior fusion alone.

Traumatic spondylolisthesis of the cervical spine following high-speed motor vehicle accident and diving injuries is relatively common (10), but it is unusual for traumatic spondyloptosis in this region not to be associated with a myelopathy (15).

Figure 1: *MRI revealed total spondyloptosis at C7-T1 level with the body of the C7 vertebra lying almost totally in front of the T1 vertebra without compression of the spinal cord.*

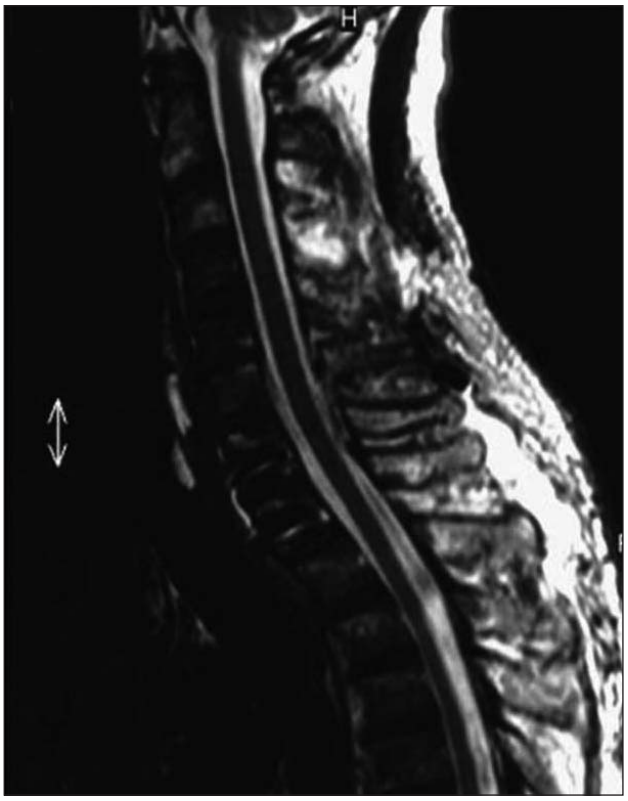

Figure 2: *MRI showed successful alignment of the cervicothoracal junction after the operation.*

Figure 3: *Lateral and anterior-posterior X-rays showed the excellent realignment achieved by C4-C5 lateral mass and T2-T3.*

Menku and his colleagues were the first to report such a case of (C6-C7 post-traumatic spondyloptosis without neurological deficits) (13). Our case is the first spondyloptosis of the cervicothoracic junction (C7-T1) without a neurological deficit.

We believe that, our patient did not have a neurological deficit due to the posterior element fracture which probably led to a spontaneous dorsal decompression of the spinal canal and allowed the cord to release posteriorly (17).

Most practitioners, as we did in our case, strongly advocate reduction of a case of cervical fracture/instability with no neurological deficit with gradated axial traction applied with the patient awake and under close neurological observation. The axial traction was applied with head tongs in our patient while the intervertebral disc remained in its origin without causing a traumatic herniation and cord compression (6). Traction re-establishes normal spinal alignment and helps initial decompression of the spinal cord (16).

Timing of surgery is under debate. While some authors argue that early operation is associated with significant morbidity due to a retropulsed disc, others believe that early intervention is not associated with a higher incidence of complications (11,12).

In cases of over distraction the weights are reduced to one third of the attempted weight and muscle relaxants, typically diazepam, are administered (19,21)

We initially stabilized the fractured level anteriorly to avoid the risk of additional trauma in case of turning the patient on the operation table for the posterior approach. Although an excellent correction of the cervical alignment was achieved by this procedure, we performed a posterior fixation due to the presence of severe laminae fractures at this highly mobile cervicothoracic segment. Thus, we had obtained three-column fusion by means of successful placement of lateral mass and transpedicular screw- rod construction posteriorly and insertion of an anterior cervical plate and peek cage. Therefore, we mobilized and discharged the patient early in the postoperative period.

CONCLUSION

Although, post-traumatic spondyloptosis without neurological deficit has not been previously

reported in the literature at C7-T1 level, they should be considered as severely unstable fractures due to both anterior dislocation and multiple posterior element fractures. These patients should be treated with anterior and posterior stabilization techniques in order to achieve early mobilization.

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