OLGU SUNUMU CASE REPORT

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A Case of Brown-Sequard Syndrome Due to Cervical Disc Herniation

Servikal Disk Herniasyonu Sonucu Gelişen Brown-Sequard Sendromu Olgusu

Canan TIKIZ[a], Aslıhan ULUSOY[b], Çağla DOĞAN[a]

[a]Clinic of Physical Medicine and Rehabilitation, Manisa Celal Bayar University Hafsa Sultan Hospital, Manisa, TURKEY
[b]Clinic of Physical Medicine and Rehabilitation, New Urla State Hospital, İzmir, TURKEY

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ABSTRACT Brown-Sequard syndrome is an incomplete, hemisection of the spinal cord injury characterized by ipsilateral motor weakness and loss of pain and temperature sensation on the opposite side below the lesion level. Cervical disc herniation is an exceptional cause of this syndrome. The importance of early diagnosis in this disease is that by early surgical intervention the prognositic outcomes are better than the other etiologic reasons. We aim to present a case of patient diagnosed as C5-C6 herniated cervical disc resulting in Brown-Sequard syndrome who had clinical improvement after surgical intervention.

Keywords: Brown-Sequard syndrome; cervical disc herniation

ÖZET Brown-Sequard sendromu spinal kordun inkomplet, yarı kesisi sonucunda gelişen lezyon altında ipsilateral motor güçsüzlük, kontraleteral duyu ve ısı kaybı ile karakterize bir yaralanmadır. Servikal disk herniasyonu bu sendromun istisnai bir nedenidir. Bu hastalıkta erken tanının önemi, erken cerrahi müdahale ile prognozun diğer etyolojik nedenlere oranla daha iyi seyretmesidir. Biz bu olguda C5-C6 servikal disk hernisine bağlı Brown-Sequard sendromu tanısı alan ve cerrahi girişim sonrası klinik iyileşme gösteren hastayı sunmayı amaçladık.

Anahtar Kelimeler: Brown-Sequard sendromu; servikal disk herniasyonu

Brown-Sequard syndrome (BSS) is an incomplete spinal cord lesion that reflects the spinal cord's hemi-compression or hemisection, characterized by the loss of ipsilateral motor function resulting from corticospinal tract dysfunction and also contralateral pain and temperature sensation loss due to spinothalamic system dysfunction. The most common causes of this syndrome are traumatic injuries and spinal cord neoplasms.[1,2] In addition, other etiologies, including ischemia, epidural hematoma, multiple sclerosis have been described.[3] Cervical disc herniation is an exceptional cause of this syndrome. Considering the severity of neurological deficits in BSS, it is important to raise awareness about this syndrome and early diagnosis. The aim of this case report is to emphasize the consideration of BSS as a rare diagnosis in the patients with cervical disc herniation exhibiting atypical clinical findings.

CASE REPORT

A 31-year-old male patient presented with weakness on the left side for 1 month, loss of the pain and temperature sensation on the right upper and lower extremities. He was having urinating difficulty for a month. He was admitted to another center with these complaints and his brain magnetic resonance imaging

Correspondence: Canan TIKIZ
Manisa Celal Bayar University Hafsa Sultan Hospital, Clinic of Physical Medicine and Rehabilitation, Manisa, TURKEY/TÜRKİYE
E-mail: tikizc@gmail.com

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(MRI) was normal. However, the patient's complaints persisted and loss of balance and co-ordination had begun in the last few days. The patient had no history of trauma but he had worked in stringent jobs as carrying heavy loads for long years. The motor examination revealed mild weakness on the left side (4+/5). Reduced sensation of pain and temperature were detected on the right side of the body below the C6 dermatome. Right lower extremity proprioception sensory reduced. Deep tendon reflexes; bilateral biceps and brachioradialis were hypoactive, bilateral triceps, patella and achilles reflexes were hyperactive. There was positive Hoffman sign on the right side. Magnetic resonance imaging of the cervical spine showed C5-C6 disc herniation that compressing the spinal cord with severe spinal stenosis (Figure 1). As a result of compression, medulla spinalis edema was prominent on the left side between C5 and C6.

The patient underwent decompressive C5-C6-C7 hemilaminectomy and C5-C6-C7 left flavectomy. In the absence of the desired regression of symptoms, the second operation was planned after one month. C5-6 discectomy with anterior approach was performed. After sufficient decompression, carbon fiber cage was placed in the region. Significant improvement was observed in clinical findings at the first month follow-up of the second operation. The level of pain sensation decreased to T10 dermatome and temperature sensation decreased from C6 level to T7. The sensation of pressure and superficial tactile revealed bilateral ordinary. Examination of the balance and coordination, gait and motor muscle strength were detected to be normal and also urinary complaints improved.

DISCUSSION

Brown-Sequard syndrome is a rare syndrome and is often described in association with spinal cord injury resulting in hemisection of the spinal cord. In 1928, Stookey first identified a herniated cervical disc as a possible cause of BSS.[4] So far 70 cases have been reported, the age ranged from 23 to 86 years (mean 47 years) and C5-C6 was the most common localization of discogenic BSS in the international literature.[5] As in other spinal cord lesions, the functional recovery expectation in BSS is poor. However, a rare development of BSS due to cervical disc herniations may also be treated potentially.[6] In case of early diagnosis, the prognosis of BSS due to disc herniation is better than traumatic and vascular etiologies.

In patients with degenerative disc disease, the diagnosis of BSS takes time due to comorbid health problems, age and complicated neurological conditions. This is a disadvantage for completing recovery and minimizing morbidity and mortality. The symptoms are also explained by varying degrees of spinal cord compression.[7] These patients usually present with signs of myelopathy. However, when the symptoms are lateralized, as in our patient, it is difficult to observe exactly all the clinical presentation findings of BSS which develop secondary to cervical disc herniation.[5,8] Further, signs and symptoms are often confusing, leading to a variety of diagnostic testing that distracts from the real problem and may lead to significant delay in the diagnosis.

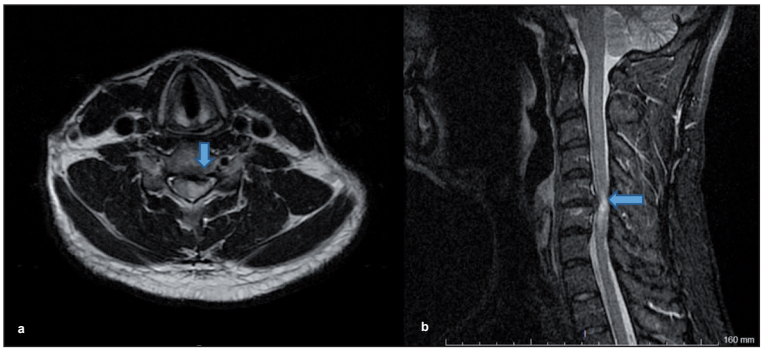

FIGURE 1: a) Left mediolateral extruded disc herniation between C5 and C6 obliterates the ventral subarachnoid space with cord edema, **b)** STIR sequence , C5-6 cord edema and narrowing of the spinal canal diameter.

Unfortunately, long-term conservative treatment in these cases with faint onset may result in quadriparesis requiring surgical emergency.[9] Our case was a young patient with degenerative disc hernia, contrary to the literature. Although there was no acute trauma in his history, when he was questioned in detail, he was learned to have worked in compelling jobs as carrying heavy loads on the shoulders and back. These recurrent microtraumas and overuse may have caused BSS in this case.

The recognition of the disease increases by the widespread use of MRI, careful anamnesis and detailed neurological examination. However, as in our case, the acute manifestation of hemiparesis associated with BSS may mislead physicians into a delayed diagnosis, or incorrect diagnosis of a cerebral stroke.[10] Therefore, with a detailed history and physical examination, early diagnosis and early surgical treatment are recommended.[11]

Although BSS is unusually seen in cervical disc herniation, the recently published reports show that the number of discogenic BSS increases with the widespread use of MRI. This is probably more common than reflected in the literature.

CONCLUSION

Cervical disc herniation as a cause of BSS is a rare occurrence. Since disc herniations with atypical symptoms may be confusing, the patient should be questioned carefully. A detailed neurological examination and cervical MRI are important tools for early diagnosis of BSS. If diagnosed early, the prognosis of BSS due to disc herniations is better than traumatic and vascular etiologies. However BSS has the best prognosis of any of the incomplete spinal cord injuries. Therefore early surgical intervention is recommended for a favorable functional neurological recovery.

Informent Consent

The patient consent was obtained from the patient for publication of this case.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

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