



## BROWN-SÉQUARD SYNDROME DUE TO A CERVICAL GANGLION CYST AFTER LUMBAR SURGERY

### LOMBER CERRAHİ SONRASI BROWN-SEQUARD SENDROMUNA YOL AÇMIŞ GANGLİYON KİSTİ

Ramazan KAHVECİ<sup>1</sup>,  
Serkan ŞİMŞEK<sup>2</sup>,  
Uygur ER<sup>3</sup>,  
Hakan SEÇKİN<sup>2</sup>,  
Hüseyin ÖZEVREN<sup>1</sup>

<sup>1</sup>Neurosurgery Clinic, Ministry of Health, Kırıkkale Yüksek İhtisas Hospital, Kırıkkale.

<sup>2</sup>Neurosurgery Clinic, Private Lokman Hekim Hospital, Ankara.

<sup>3</sup>Neurosurgery Clinic, Private Koru Hospital, Ankara.

#### SUMMARY

Symptomatic ganglion cysts of the cervical spine usually cause progressive neurological deterioration. A 67-year-old female patient presented with acute hemiparesis due to a C3–4 ganglion cyst after lumbar surgery. The lesion was removed urgently by left-sided C3–4 partial hemilaminectomy, and postoperatively the patient's neurological deficits improved almost completely. Asymptomatic ganglion cysts of the upper cervical spine may cause acute neurological deterioration due to narrowing of the spinal canal resulting from a slight expansion of the vertebral column during laryngeal intubation, even in the absence of any preceding neurological findings. In such cases, minimally invasive surgical approaches should be chosen by surgeons for the prevention of intraoperative and/or postoperative complications.

**Keywords:** Cervical spine, Ganglion cyst, Brown-Séquad syndrome

**Level of evidence:** Case report, Level IV

#### ÖZET

Servikal omurganın semptomatik ganglion kistleri sıklıkla ilerleyici nörolojik kötüleşmeye neden olurlar. 67 yaşında erkek hasta lomber cerrahi sonrası C3-4 ganglion kistine bağlı gelişen akut hemiparezi ile sunulmaktadır. Lezyon acil olarak sol taraflı C3-4 kısmi laminektomi ile çıkartıldı ve cerrahi sonrası hastanın nörolojik defisiti hemen hemen tümüyle iyileşti. Üst servikal omurganın asemptomatik ganglion kistleri daha önceki nörolojik bulguların yokluğunda bile laringeal entübasyon süresince vertebral kolonun hafif ektansiyonuna bağlı gelişen spinal kanal daralması nedeniyle akut nörolojik bozukluğa yol açabilirler. Bu tür olgularda, intra- ve/veya postoperatif komplikasyonlardan korunabilmek için cerrahlar tarafından minimal invaziv cerrahi yaklaşımların tercih edilmesi lazımdır.

**Anahtar kelimeler:** Servikal omurga, ganglion kisti, Brown- Sequard sendromu

**Kanıt düzeyi:** Olgu sunumu, Düzey IV

**Address:** Uygur Er,  
Söğütözü C., 4.Sk., No:22/7,  
06510, Ankara  
**E-mail:** uygurer@gmail.com  
**Tel:** 0505 5892355  
**Fax:** 0312 2341651  
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## INTRODUCTION:

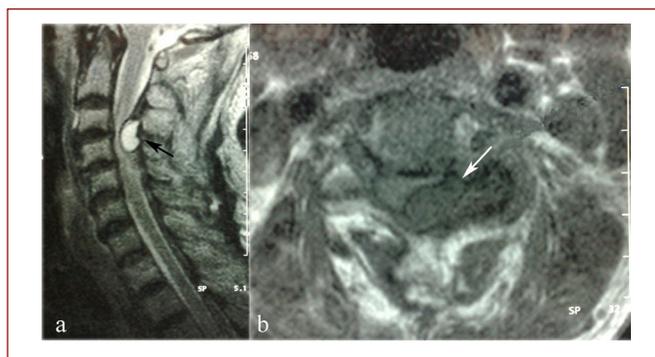
Despite the prevalence of degenerative spinal disease, ganglion cysts are quite rare. These cysts generally grow slowly, and present with gradually increasing radiculopathy and/or myelopathy<sup>1</sup>. To our knowledge, no cases of a cervical ganglion cyst presenting with acute hemiparesis after lumbar surgery have previously been reported. Magnetic resonance imaging (MRI) provides preoperative diagnostic accuracy, and decompression of the spinal cord with removal of the cyst results in a good neurological recovery.

## CASE REPORT:

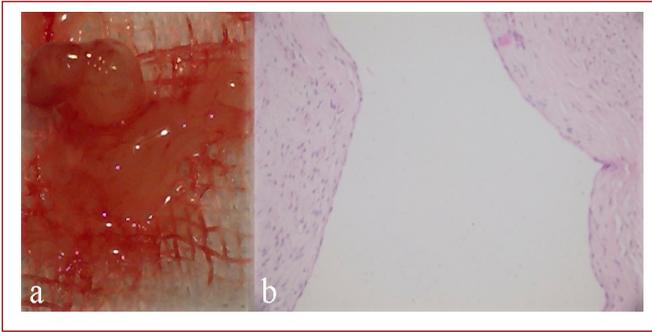
A 67-year-old female patient was admitted to our outpatient clinic with complaints of neural claudication, lower back pain and numbness of both lower extremities aggravating gradually for six months. On physical examination, she had stable vital signs. Her neurological examination was completely normal except for bilateral hypoesthesia between the L4 and S1 dermatomes.

Lumbar magnetic resonance imaging showed multiple degenerative changes through the L3 to S1 spinal levels and L4-5 spinal stenosis. The patient was operated on for spinal stenosis at the L4-5 level by L4 laminectomy under general anesthesia. The trachea was intubated with difficulty, overextending the neck due to masking of the uvula by the base of the tongue. After waking up from anesthesia, she had severe left-sided hemiparesia. Cranial computerized tomography (CT) was performed immediately to rule out a possible diagnosis of cerebrovascular accident, but no abnormalities were seen. Afterwards, neurological re-examination showed reduced vibration and proprioception on the left side, and diminished pain and

temperature stimuli on the right side below the C5 level. A cervical MRI scan was then performed to evaluate the possible diagnosis of acute Brown-Séquard syndrome, and revealed an intraspinal extradural cystic mass adjacent to the left C3-4 facet joint that was hypointense on T1-weighted and hyperintense on T2-weighted images, and was compressing the spinal cord ventromedially on the left side of the spinal canal (Fig.-1.a, b). Urgent surgical decompression was performed and the cyst was removed easily by left-sided C3-4 partial hemilaminectomy. Macroscopically, the well-defined cyst was light yellowish in color with a gelatinous and highly viscous fluid. Microscopic examination revealed that the cyst had a fibrocollagenous wall without synovial lining, consistent with a ganglion cyst (Fig.-2.a,b). The postoperative course was satisfactory and the patient's complaints improved almost completely in a six-month follow-up period after surgery.



**Figure-1.** (a) Sagittal T2-weighted MRI showing compression of the spinal cord posteriorly at the C3-4 facet joint level by an intraspinal hyperintense cystic lesion (*black arrow*), (b) Axial T1-weighted MRI showing compression of the spinal cord extradurally from the left posterolateral area by the same hypointense cystic lesion (*white arrow*).



**Figure 2.** (a) Macroscopically, the gelatinous lesion with a smooth surface was light yellowish in color; (b) Microscopic examination of the specimen shows a fibrocollagenous wall without synovial lining (hematoxylin and eosin staining, 40× magnification).

## DISCUSSION:

Ganglion cysts occur most frequently in the lumbar spine due to degeneration of the facet joints resulting from excessive and chronic overloading in the aging process. GCs of the cervical spine presenting with acute neurological deterioration are extremely rare<sup>2-5</sup>. This situation can occur due to an increase in size of the cyst resulting from trauma or intrinsic hemorrhage. In our case, after waking up from anesthesia the patient had left hemiparesia, presumably due to compression-induced transient ischemia of the spinal cord resulting from excessive narrowing of the spinal canal by a ganglion cyst during intubation. In addition, during general anesthesia, the patient lost volitional control of her neck position, which might induce spinal ischemia by oppression of the spinal cord and the posterior longitudinal vessels.

The differential diagnosis of GCs includes schwannoma, meningioma, metastasis and other intraspinal extradural cysts such as ligamentum flavum cysts and arachnoid cysts. Although an accurate diagnosis of these cysts can be made after histological examination, neuroimaging is

useful in diagnosing ganglion cysts, and MRI is the best choice for preoperative evaluation<sup>6</sup>.

Surgery using a posterior approach is the standard treatment option, and a variety of surgical approaches have been reported previously. Less invasive approaches should be given preference, because no recurrence has been reported after partial excision of cervical GCs, and decompression of the spinal cord is adequate treatment to allow postoperative neurological recovery<sup>1</sup>. In this case, the authors preferred standard posterior hemilaminectomy for surgical excision of the cyst, to avoid intraoperative complications and postoperative spinal instability.

Consequently, physicians should be alert for a possible diagnosis of cervical GCs in cases of acute hemiparesis occurring soon after waking up from general anesthesia. In addition, particularly for elderly patients, even without neurological findings, the neck should be positioned carefully and intubation should be performed avoiding overextension of the neck. In such cases, urgent spinal decompression using minimally invasive surgical approaches can prevent surgical complications and provide improvement in the neurological condition.

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