

Cerebrospinal Fluid Leakage in an Adolescent-Male Following Heavy Lifting

Adölesan Bir Erkekte Ağır Yük Kaldımayı Takiben Oluşan Beyin Omurilik Sıvısı Kaçağı

Osman Kipoğlu¹, Burçin Nazlı Karacabey¹, Orhan Coşkun¹, Mehmet Barbuoğlu², Edibe Pembegül Yıldız¹, Nur Aydın¹, Meliha Mine Çalışkan¹

¹Istanbul University, İstanbul Faculty of Medicine, Department of Child Neurology, İstanbul, Türkiye

²Istanbul University, İstanbul Faculty of Medicine, Department of Neuroradiology İstanbul, Türkiye

ORCID ID: O.K. 0000-0001-9208-6697; B.N.K. 0000-0001-8857-4356; O.C. 0000-0001-9229-404X; M.B. 0000-0002-8715-1893; E.P.Y. 0000-0002-8016-0404; N.A. 0000-0003-0492-3411; M.Ç. 0000-0002-6869-3937

Citation/Atf: Kipoglu O, Karacabey BN, Coskun O, Barbuoğlu M, Yildiz EP, Aydinli N, et al. Cerebrospinal fluid leakage in an adolescent-male following heavy lifting. Çocuk Dergisi - Journal of Child 2022;22(3):248-250. <https://doi.org/10.26650/jchild.2022.858767>

ABSTRACT

In this case we report on an adolescent male with new onset weakness of the low extremities after heavy load lifting. Spinal magnetic resonance imaging (MRI) demonstrated cerebrospinal fluid (CSF) leakage in the lumbar and thoracic region in the T2 sequence. Orthostatic headache was the main symptom in the following period. After bed rest and fluid replacement, the patient's symptoms completely recovered.

Keywords: Cerebrospinal fluid leakage, heavy load lifting, orthostatic headache

INTRODUCTION

With the development of diagnostic methods, the diagnosis of CSF leakage has increased recently. CSF leakage may occur after spinal surgery or lumbar puncture or spontaneously (1-3). Spinal cord trauma is another etiologic factor (4). Headache is the most common presenting symptom, and backache, gait disturbance and bladder dysfunction may be seen (5). In this case, we present a 15-year-old male who developed a significant epidural cerebrospinal fluid collection following heavy lifting. CSF leakage after heavy load lifting in children has not been reported in the literature. In communities with a high rate of child labor, such as Turkey, clinicians should also keep in mind the CSF leakage in children with orthostatic headache and myelopathy findings. We think that our study will contribute to the literature in terms of suggesting that the history of heavy lifting should also be questioned in these patients.

ÖZ

Bu olgu sunumunda, ağır yük kaldırdıktan sonra alt ekstremitelerinde yeni başlayan güçsüzlük olan adölesan bir erkek hastayı sunuyoruz. Spinal manyetik rezonans görüntüleme (MRG) T2 sekansında lomber ve torakal bölgede beyin omurilik sıvısı (BOS) sızıntısı görüldü. Takip eden dönemde ortostatik baş ağrısı ana semptomdu. Yatak istirahati ve sıvı replasmanı sonrası hastanın semptomları tamamen düzeldi.

Anahtar Kelimeler: Beyin omurilik sıvısı sızıntısı, ağır yük kaldırma, intrakraniyal hipotansiyon

CASE REPORT

A 15-year-old male presented to our pediatric emergency department with gait disturbance and weakness of the lower extremities. Two days previously, he had carried a 25 kilogram load on his back along 65 stair steps three times. After that, he was admitted to a local health facility with abdominal distention, inability to urinate, gait disturbance and weakness of the lower extremities. Urinary ultrasonography showed globe vesicle, and urine catheter was performed for urine retention. Cranial and whole spinal MRIs without contrast were performed and reported to be normal. Since the patient's complaints did not improve, he was admitted to our pediatric emergency department. On examination, he was awake, active and oriented to time, place and person. Eye contact was normal, and higher mental function and language were appropriate for age. Pupillary reflex was bilateral positive, and

Corresponding Author/Sorumlu Yazar: Osman Kipoğlu E-mail: osmankip@yahoo.com

Submitted/Başvuru: 13.01.2021 • **Revision Requested/Revizyon Talebi:** 28.01.2022 • **Last Revision Received/Son Revizyon:** 20.03.2022 • **Accepted/Kabul:** 13.07.2022 • **Published Online/Online Yayın:** 28.12.2022



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the pupils were isochoric. Other cranial nerve examination was unremarkable. Muscle strength in the upper extremities was 5/5, in left leg, it was 5/5 and in the right leg, it was 4/5. There was no deficit in sensory examination. Bilateral hyperactive patellar reflexes and positive Romberg test were

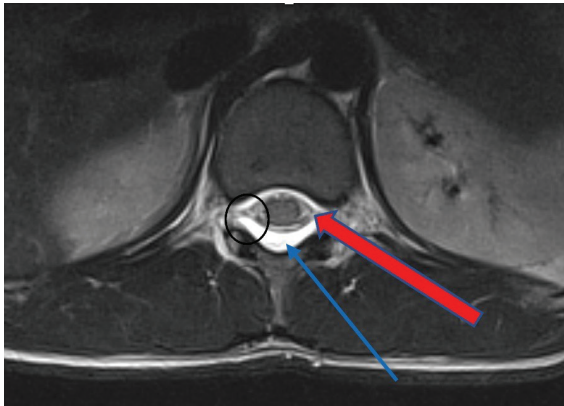


Figure 1: Axial T2 MRI, thoracic region, showed that epidural CSF accumulation (12 hours after lumbar puncture). Red arrow shows dura mater, blue arrow shows epidural space, black circle shows compressed nerve root

observed. Cerebellar system examination was unremarkable. Blood biochemistry sample was normal. Lumbar puncture was performed. CSF color and pressure were normal. CSF biochemistry and microbiology were not compatible with any inflammatory process. Orthostatic headache occurred 24 hours after the lumbar puncture. Cranial MRI was compatible with slight reduction in ventricle size. Spinal MRI with contrast was performed and revealed CSF leakage in the lumbar and thoracic region in the T2 sequence (Figure 1 and Figure 2 A, B). Normal axial spinal T2 MRI is shown in Figure 2 C.

When the first MRI images (Figure 3), which were performed at the local health center (before the lumbar puncture), were re-evaluated, presence of CSF leakage (less than current MRI) was detected.

Management of the case was performed as multidisciplinary with the neuroradiology and the neurosurgery departments. A conservative approach with bed rest, hydration and use of analgesics were our treatment methods. With this approach, his complaints regressed within 5 days and the patient was discharged. Radiologic improvement occurred in addition to clinical symptoms relief. A control MRI after three months showed just a little epidural CSF accumulation (Figure 4).

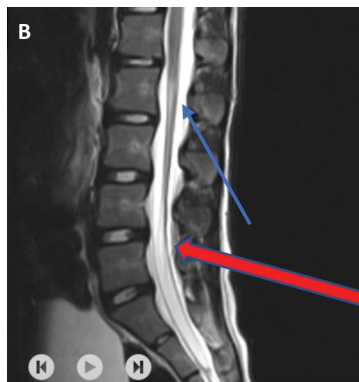
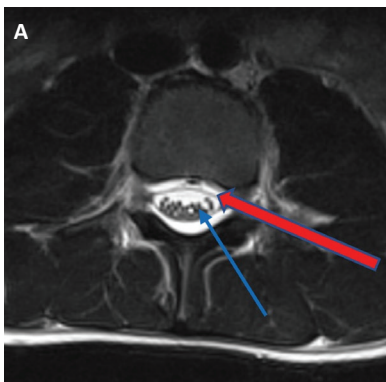


Figure 2 A: Axial T2 MRI, **B:** Sagittal T2 MRI, lumbar region, shows that extradural CSF accumulation (12 hours after lumbar puncture). Red arrow shows dura mater, blue arrow shows epidural space. **C:** Axial T2 MRI, normal lumbar region in different child (for comparison)

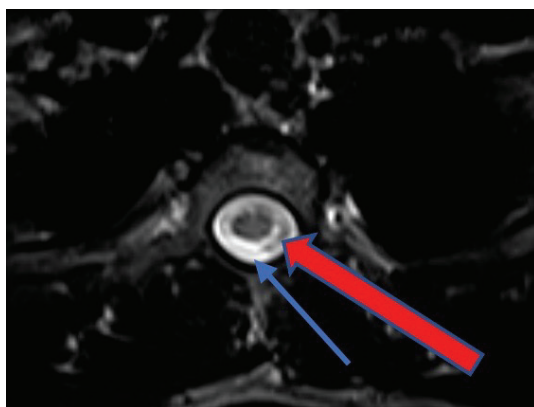


Figure 3: Axial T2 MRI, thoracic region, shows that extradural CSF accumulation (before lumbar puncture). Red arrow shows dura mater, blue arrow shows epidural space 5

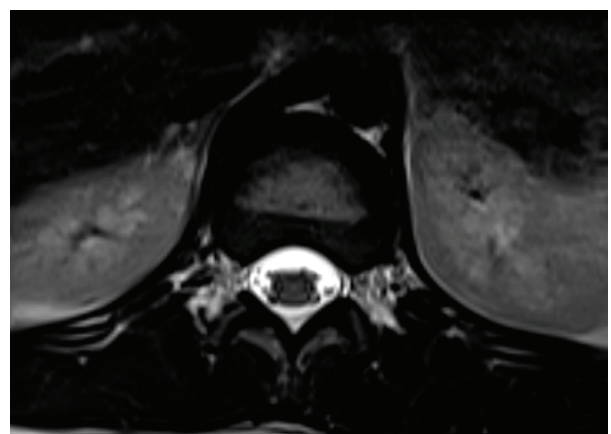


Figure 4: Axial T2 MRI, thoracic region, shows that just little extradural CSF accumulation (after three months)

DISCUSSION

CSF leakage can be spontaneous, iatrogenic, or traumatic. Iatrogenic CSF leakage can occur after epidural injections, lumbar punctures, intrathecal catheters or surgery. Typical presentation for CSF leakage due to intracranial hypotension is an orthostatic headache, worsening in the upright position (6).

It is possible that CSF leakage stem from lumbar puncture site in spine, and symptoms are seen when intracranial hypotension occurs. In a study performed in adults, the rate of CSF leakage after lumbar puncture was found to be up to 67.5% (7). Koch et al. showed 25 children with epidural CSF leak after lumbar puncture (8). Amini et al. reported a case where urinary retention and lower extremity weakness was seen in a 4-year-old girl after lumbar puncture (9).

Although traumatic spinal CSF leakage is a known cause, a limited number of cases have been described in the literature. In 1996, a 39-year-old female patient presented with orthostatic headache, nausea and photophobia after riding a roller-coaster. Her postural headache persisted for several months. Thoracic CSF leakage was seen in myelography. A lumbar epidural blood patch was performed, and the symptoms promptly resolved (10).

In our case, extradural CSF leakage firstly developed due to the heavy lifting, and after that, the diagnostic lumbar puncture worsened the situation, and clinical findings became more typical and pronounced for intracranial hypotension.

Patients having neurological symptoms who are suspected of extradural CSF leakage should undergo MRI of the spine. Typical findings on MRI include abnormal spinal epidural fluid leakage with anterior displacement of the dura (9).

When patients are diagnosed with an epidural CSF collection, first-line treatment options may be offered; initial treatment options include either a conservative measure such as bed rest, oral/intravenous hydration, use of an abdominal binder, and generous caffeine intake, or an epidural blood patch procedure.

After diagnosis was confirmed, we followed-up our patient with bed rest and intravenous hydration. After 5 days of conservative approach, the symptoms regressed, and the patient was discharged.

CONCLUSION

CSF leakage can be spontaneous, iatrogenic or traumatic. Besides, it causes intracranial hypotension, and the most common presentation symptom is orthostatic headache worsening with an upright position. However, as in our case, it can rarely present with extremity weakness and urinary retention. It should be kept in mind that CSF leakage can be presented with extremity weakness and urinary retention, and in these patients, the history of heavy lifting and trauma should be questioned.

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- O.K., M.Ç., N.A., M.B.; Data Acquisition- B.N.K., O.C.; Data Analysis/Interpretation- O.K., M.Ç., E.P.Y.; Drafting Manuscript- .K., O.C., B.N.K.; Critical Revision of Manuscript- M.Ç., N.A., M.B., E.P.Y.; Final Approval and Accountability- O.K., M.Ç., N.A., M.B., B.N.K., O.C., E.P.Y.

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

Bilgilendirilmiş Onam: Katılımcılardan bilgilendirilmiş onam alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Çalışma Konsepti/Tasarım- O.K., M.Ç., N.A., M.B.; Veri Toplama- B.N.K., O.C.; Veri Analizi/Yorumlama- O.K., M.Ç., E.P.Y.; Yazı Taslağı- O.K., O.C., B.N.K.; İçeriğin Eleştirel İncelemesi- M.Ç., N.A., M.B., E.P.Y.; Son Onay ve Sorumluluk- O.K., M.Ç., N.A., M.B., B.N.K., O.C., E.P.Y.

Çıkar Çatışması: Yazarlar çıkar çatışması beyan etmemişlerdir.

Finansal Destek: Yazarlar finansal destek beyan etmemişlerdir.

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