

Epidermoid cyst and lipoma with tethered spinal cord: A case report

Epidermoid kist, lipom ve tethered kord birlikteliği: Olgu sunumu

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ABSTRACT

Tethered cord syndrome (TCS) is a stretch-induced disorder of the spinal cord caused by congenital or acquired conditions. Due to improvement of imaging technique, it is currently realize that TCS may be seen with different pathology. Differing from relevant literature, concomitant presence of TCS, epidermoid cyst and lipoma in a 17 year old female patient is presented and discussed in the present paper.

Key words: Tethered cord syndrome, intradural epidermoid cyst, lipoma.

INTRODUCTION

Tethered cord syndrome (TCS) is a group of disorders caused by congenital or acquired factors leading stretch-induced functional disorder of the spinal cord and characterized by progressive neurological deficits related to restriction of normal mobility of medulla spinalis within the spinal canal.¹

Being a sub-group of congenital tumors, spinal epidermoid cysts mostly develop in the intradural extramedullary region.² Intradural lipoma is a rare and slowly growing tumor composing only 1% of intraspinal tumors.³ Due to recent developments in imaging methods various etiological factors has been shown to be responsible for the development of TCS.⁴

In this paper, concomitant presence of TCS, epidermoid cyst and lipoma in a 17 year old female patient is presented and discussed. We assume that

ÖZET

Tethered kord sendromu (TKS) konjenital ya da edinsel nedenlerle omuriliğin gerilmesi sonucu oluşur. Manyetik Rezonans Görüntüleme (MRG)'nin spinal bölge rahatsızlıklarının tanısında kullanılmaya başlanması ile birlikte TKS'nin farklı patolojilerle birlikte görülebileceği fark edilmiştir. Bu yazıda literatürden farklı olarak TKS'nin, intradural epidermoid kist ve lipom ile birlikte ortaya çıktığı 17 yaşında bir kadın hasta anlatıldı ve tartışıldı.

Anahtar kelimeler: Tetheret cord sendromu, intradural epidermoid kist, lipom.

this case will contribute to the relevant literature due to admission with non-specific lumbar and leg pain as well a different clinical presentation of TCS.

CASE

A 17 year old female patient admitted to our out-patient clinic with the complaints of increasingly severe low back pain especially at nights radiating to both legs plus numbness for the last 5 months. She reported that she had no benefit from past medical treatment and physical therapy. No symptoms of urinary or fecal incontinence or retention were evident.

Physical examination of lumbar cord and lower extremity revealed full range of motion in the lumbar region as well as the hip joint. Dorsiflexion strength was 4/(+)5 and plantar flexion was 4/5 in the right ankle joint. In the right leg, hypoesthesia



of L5-S1 dermatomes was identified. Achilles reflex was hypoactive at the right side. Other findings related to motor, sensory and reflex examination were normal. No pathological finding was evident in routine blood tests (Complete Blood Count, Biochemistry Test, CRP, erythrocyte sedimentation rate, urine analysis). Lumbar MRI revealed extension of medullary cone down to the inferior corpus of the L3 vertebrae (tethered cord). Originating from this level and extending through the inferior side, a 32x17 mm sized extramedullary mass lesion with intradural location and having slight hyperintensity

compared with cerebrospinal fluid on T1 weighted images while being hyperintense on T2 weighted images and showing slight thin-walled contrast in contrast series was identified to be compatible with epidermoid cyst firstly. Additionally, images compatible with an intradural extramedullary lipoma sized approximately 10x3 mm in the anterior neighborhood of this lesion while approximately 15x7 mm in the posterior spinal cord at L2-3 level sections was identified (Fig 1-4). While an operation was recommended after neurosurgical consultation, she refused to undergo an operation.

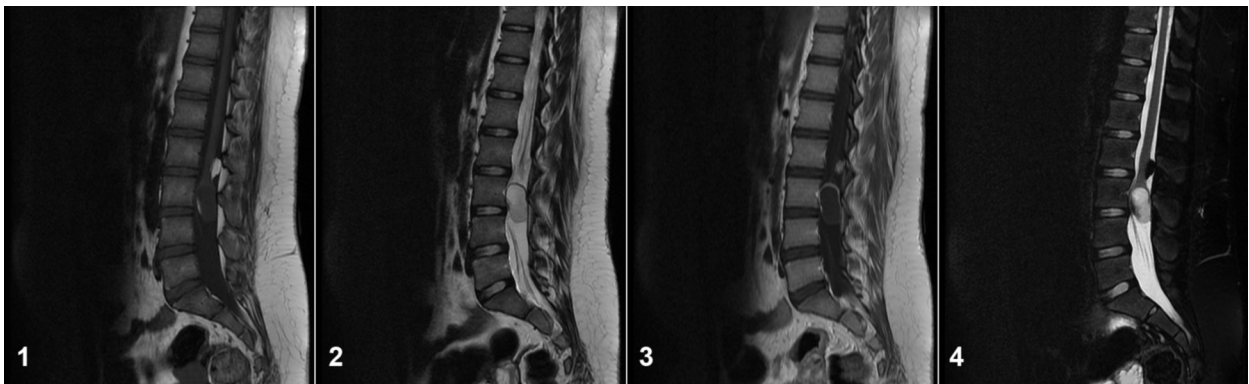


Figure 1-4. Sagittal T1-weighted (1), T2-weighted (2), postcontrast (3) and STIR (4) images show the tethered cord in level L2-3, the epidermoid cyst of the filum terminale and the lipoma

DISCUSSION

Improvement in imaging techniques with widespread use of Magnetic Resonance Imaging (MRI) in particular, revealed concomitant presence of stretched spinal cord not only with occult type dysraphism but also with certain abnormalities including tumor, trauma, arachnoid and lipomyelomeningocele, dermal sinus and syringomyelia.⁴

Being the most common form of occult spinal dysraphism, spinal lipomas occur by encapsulated accumulation of lipid and connective tissue particles within the spinal cord. Mostly in relation to dural defect, they extend from spinal cord to subcutaneous tissue.⁵ Spinal lipomas not accompanied with spinal dysraphism compose 1% of overall spinal masses with similar frequency in males and females.⁶ Frequently, since they are located in the posterior region of the cervicothoracic or thoracic spinal cord, the first sign is the difficulty in walking due to posterior compression.⁷ Afterwards, progressive weakening and spasticity of the extremi-

ties arise. Having long lasting symptoms in general, the average time for patients to admit a physician is 3-6 years.⁸ Progressive nature of the complaints indicates the gradual enlargement of lipomas. In our case, lacking concomitant spinal dysraphism and being located in the lumbar region, spinal lipoma had distinct features. Besides, lack of serious complications other than pain is considered to be related to the particular location of the lipoma in the much lower segments of the spinal cord.

Identification of hyperintensity on T1 weighted images while hypointensity on T2 weighted images as well as suppression of signal intensities at fat suppression sequences facilitate to differentiate lipomas from other lesions.⁹

Lumbar puncture, trauma and congenital factors are the factors documented to be responsible for the development of epidermoid cysts.¹⁰ The ratio of intramedullary tumors was reported to be 29.6% in a series of 680 cases with primary spinal tumor by Lunardi et al.¹¹, 0.95% of which was identified

to be epidermoid cyst. Epidermoid cysts are mostly located in the thoracic region while lumbar location has been documented to be very rare.¹²

In this respect, lumbar location of the cyst in our case is worth noting. Moreover, based on medical background of our patient, we assumed the likelihood of congenital factors to have a role in the etiology of the disease.

Epidermoid cysts are associated with non-specific MRI findings such as appearing isodense or hypodense on T1 weighted images while showing hyperintensity on T2 weighted images. MRI is valuable in identification of the borders of the lesion as well as its relation to surrounding tissues.¹³

Stretching and restricted mobility of the cord via disturbing cellular metabolism and neuronal function leads to certain pathophysiological events responsible for progressive ischemia in the cord.¹⁴ Frequently, it is diagnosed in childhood and symptomatic onset in adulthood is very rare.¹⁵ Progressive leg and low back pain, weakness and sensory loss in the lower extremities, pain in the anorectal region, difficulty in walking, bladder and intestinal dysfunction, extremity abnormalities and cutaneous defects compose the clinical picture of the disease.¹ In cases with asymptomatic clinical course until adulthood, heavy lifting, excessive exercise, lithotomy position, childbearing, long-term sitting and spinal trauma cause the initiation of the symptoms.¹⁶

The clinical picture of our case is compatible with the adulthood presentation of the disease considering pain and numbness as the leading complaints and evidence of hypoesthesia in the right L5-S1. Furthermore, fortunately there was no deformity or incontinence development related to the disease. There was no history of activity capable of yielding trauma and stretch in the spinal cord. We consider gradual enlargement of epidermoid cyst as well as age-dependent alterations in the lumbar colon to be responsible for the increase in spinal cord stretch.

Notably, our case is important in terms of being the first example of concomitant presence of epidermoid cyst and lipoma in the literature. We think that in concordance with progress that made in imaging technique, the number of tethered cord syndrome cases that seen with different pathology will increase.

In conclusion, having likelihood of developing secondary to different pathologies, tethered cord syndrome must be considered in the differential diagnosis of patients who admitted with low back pain and pain and paresthesia in the legs. Detailed medical history and physical examination are crucial in such patients since the delay in the diagnosis as well as erroneous administration of electrotherapy with the misdiagnosis of mechanical low back pain seem quite possible otherwise.

REFERENCES

- Haro H, Komori H, Okawa A, Kawabata S, Shinomiya K. Long-term outcomes of surgical treatment for tethered cord syndrome. *J Spinal Disord Tech* 2004;17(8):16-20.
- Guidetti B, Gagliardi FM. Epidermoid and dermoid cysts clinical evaluation and late surgical results. *J Neurosurg* 1997;47(3):12-8.
- Koyanagi I, Hida K, Iwasaki Y, et al. Radiological findings and clinical course of conus lipoma: Implications for surgical treatment. *Neurosurgery* 2008;63(2):546-51.
- Duz B, Gocmen S, Secer HI, Basal S, Gonul E. Tethered cord syndrome in adulthood. *J Spinal Cord Med* 2008;31(3):272-8.
- Naidich TP, Blaser SI, Delman BN, et al. Congenital Anomalies of the Spine and Spinal Cord: Embryology and Malformations. In: Atlas SW, editör. *Magnetic Resonance Imaging of the Brain and Spine*. Philadelphia, PA: Lippincott Williams and Wilkins, 2002:1527-37.
- Wilson JT, Shapiro RH, Wald SL. Multiple intradural spinal lipomata with intracranial extension. *Pediatr Neurosurg* 1996;24(3):5-7.
- Fujiwara F, Tamaki N, Nagashima T, Nakamura M. Intradural spinal lipomas not associated with spinal dysraphism: A report of four cases. *Neurosurgery* 1995;37(5):1212-5.
- Giuffrè R. Intradural spinal lipomas: Review of the literature (99 cases) and report of additional case. *Acta Neurochir (Wien)* 1966;14(2):69-95.
- Tein RD. Fat suppression MR imaging in neuroradiology: Techniques and clinical application. *Am J Roentgenol* 1992;158(4):369-79.
- Roux A, Merder E, Larbrisseau A, Oube LJ. Intramedullary epidermoid cysts of the spinal cord. *J Neurosurg* 1992;76(4):528-33.
- Lunardi P, Missori P, Gagliardi FM. Fortuna A: Long-term results of the surgical treatment of spinal dermoid and epidermoid tumors. *Neurosurgery* 1989;25(1):860-4.
- Lai SW, Chan WP, Hen CY. MRI of epidermoid cyst of the conus medullaris. *Spinal Cord* 2005;43(3):320-3.
- Visdani A, Savoirdo M, Balestrini MR, Solero L. Iatrogenic intraspinal epidermoid tumor: Myelo-CT and MRI diagnosis. *Neuroradiology* 1989;31(2):273-5.
- Hays RM, Massagli TL. Rehabilitation concepts in myelomeningocele. In: Braddom RL, editor. *Physical Medicine and rehabilitation*. 2th ed. Philadelphia, W. B. Saunders Company, 2000:1217-8.
- Gupta SK, Khosla VK, Sharma BS, Mathuriya SN, Pathak A, Tewari MK. Tethered cord syndrome in adults. *Surg Neurol* 1999;52(4):362-9.
- Pang D, Wilberger JE. Tethered cord syndrome in adults. *J Neurosurg* 1982;57(6):32-47.