POSTOPERATIVE LUMBAR PSEUDOMENINGOCELE

M. Yaşar KAYNAR Ali KAFADAR Ziya AKAR A. Çetin SARIOĞLU

SUMMARY :

One of the rare complications following lumbar disc surgery is development of pseudomeningocele. In this paper we report a case of pseudomeningocele at the level of L5-S1, diagnosed by MRI following to previous lumbar disc herniation operations. Subsequent operative closure of the dural defect resulted in reversal of her neurological symptoms.

Key words : *Lumbar disc surgery, pseudomeningocele, complications.*

INTRODUCTION

Surgical excision of a herniated lumbar disc is one of the most common operations performed by neurosurgeons. The complications of these operations are rare and sporadic but due to the greater number of operations are seen not infrequently. Among them postoperative pseudomeningocele is quite rare. In this situation there is a cerebrospinal fluid (CSF) filled sac secondary to a dural tear during operations, which slowly grows in the paravertebral tissues (13, 14, 16). In the more rare form a defect of both the dura mater and arachnoid exists, thus the CSF accumulates in the soft tissues and it is later delimited by a fibrous reaction (1, 2, 9, 11, 12). The traction on the nerve roots by the sac or the entrapment of a nerve root within a dural defect in the pseudomeningocele wall may cause back pain and radicular symtoms (5). Surgical treatment should be performed in symptomatic cases. The following case report describes MRI findings and surgical repare of such a case.

Case Report:

A 38 year old woman presented with severe low back pain, left sciatic pain and headache increasing with movement. Seven months prior to admission she had an L4-L5 left partial hemilaminectomy for a ruptured L4-L5 disc at another hospital. Because of the recurrence of the same complaints a CT of the lumbar spine was done six months after the operation; this revealed recurrent disc herniation at the same site. Her complaints relieved for two weeks duration after the second operation.

On admission her examination revealed a flocculent cutaneous mass at the site of the laminectomy incision. Straight leg raising was limited bilaterally at 45 degrees. There was no neurological deficit. MRI of the lumbar spine showed a 3.5 cm x 5 cm x 5.5 cm cystic extradural lesion which has same intensity with CSF in the left posterior paraspinal region of the L5-S1 level and a communication between this cystic lesion and the subarachnoid space (Fig. 1a). A postoperative pseudomeningocele was considered. At operation, the previous operative scar was explored and a subcutaneous pseudomeningocele containing clear CSF was identified. There was a communication between the pseudomeningocele and the subarachnoid space through a 5 mm defect in the lateral aspect of the dural sac between L4 and L5 roots. The duramater was repaired with interrupted sutures and suture line was sealed with fibrin glue. In the postoperative period her complaints gradually subsided. One month later, control MRI showed a remnant pseudomeningocele cavity (Fig. 1b). At follow up 6 months later, the patient was asymptomatic and there wasn't any sign of pseudomeningocele on the MRI (Fig. 1c).

DISCUSSION

Postoperative pseudomeningocele as a very rare complication with an incidence of 0.07-2%, was first reported by Hyndman and Gerber in 1946 (4, 6, 17). Postlaminectomy pseudomeningocele may result from a tear in the dura and arachnoid causing leakage of CSF into the soft tissue. At the beginning most of the CSF is absorbed, but with progression of fibrous reaction the CSF begins to accumulate underneath or within the muscle masses of the paraspinal musculature (1, 3, 9, 13). Signs and symptoms probably due to strangulation or entrapment of a nerve root within the pseudomeningocele. Compression of a nerve root by enlarging pseudomeningocele with valve mechanism

* University of İstanbul Cerrahpaşa Medical School Department of Neurosurgery.

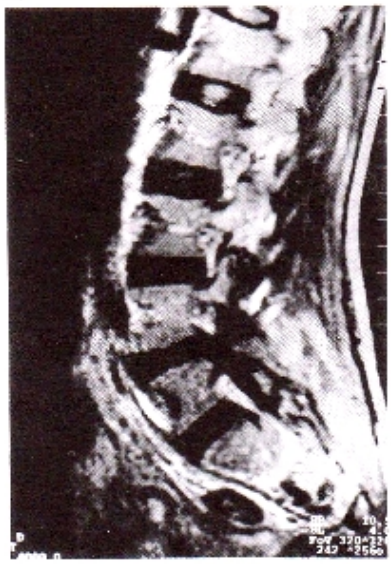

Figure 1-A. Preoperative T2 weighted sagittal lumbar MRI

Figure 1-B. One month postoperative T2 weighted sagittal MRI

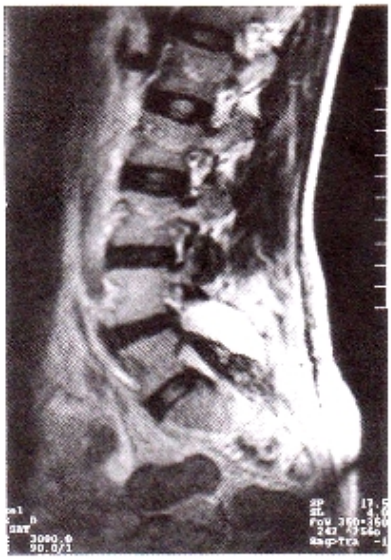

Figure 1-C. Six months postoperative T2 weighted sagittal MRI

may also cause lumbar pain and/or radicular signs as we have observed in our case (11, 15). The interval between laminectomy and forming of a symptomatic pseudomeningocele as depending on size and location of the dural tear varies from weeks to years. The most common complaint is recurrence of the lumbar pain, radicular pain is less frequent, muscle weakness and sphincteric troubles are so rare (9). Pseudomeningocele formation should be suspected in patients who had headaches increasing particularly with efforts after the surgical procedure.

The diagnosis can be achieved by CT scanning or MRI of the lumbar spine. MRI has several advantages over other diagnostic procedures such as entails no risk of ionizing radiation, gives multiplanar images, it is noninvasive and provides superior soft tissue imaging with much information about fluid characteristics and gives detailed information about the sac and its relationship with soft tissue and spinal canal (2, 8).

Surgical treatment should be considered for symtomatic lesions. It was reported that removal of the sac itself is not sufficent (15). Purpose of the treatment is the repair of the dural tear to prevent the recurrence of the pseudomeningocele (7, 10, 11, 13, 14). The dural tear should be closed in a water-tight fashion with a dural graft if needed. Fibrin glue may also be helpful.

It is not true that every dural tearing will lead to the formation of a pseudomeningocele but patients known with dural tearing should be followed up closely and if radicular symptoms and/or back pain recurres then pseudomeningocele formation should be kept in mind in the differential diagnosis.

REFERENCES

1. Barron JT: Lumbar pseudomeningocele. Orthopedics, 13: 608-610, 1990.
2. Cook DA, Heiner JP, Breed AL: Pseudomeningocele following lumbar fracture. Clin Orthop and Related Research, 247: 74-79, 1989.
3. D'Andrea F, Maiuri F, Corriero G, Gombardella A, La Tessa GA and Gangemi M: Postoperative lumbar arachnoidal diverticula. Surg Neurol, 23: 287-290, 1995.
4. Hadani FG, Knoler N, Tadmor R: Entrapped lumbar nerve root in pseudomeningocele after laminectomy: Report of three cases. Neurosurgery, 19: 405-407, 1986.
5. Hanakita J, Kinuta Y, Suzuki T: Spinal cord compression due to postoperative cervical pseudomeningocele. Neurosurgery, 7: 317-319, 1985.
6. Hyndman OR, Gerber WF: Spinal extradural cysts, congenital and acquired. Report of cases. J Neurosurg, 3: 474-486, 1946.
7. Inci S, Akbay A, Bertan V: Postoperative lumbar pseudomeningocele. Turkish Neurosurgery, 4: 43-45, 1994.
8. Laffey PA, Kricun ME: Sonographic recognition of postoperative meningocele. AJR, 143: 177-178, 1984.
9. Lee KS, Hardy IM: Postlaminectomy lumbar pseudomeningocele: Report of four cases. Neurosurgery, 30: 111-114, 1992.

10. Nash CL, Kaufman B, Frankel VH: Postsurgical meningeal pseudocysts of lumbar spine. Clin Orthop 75: 167-178, 1971.

11. Pagni CA, Cassinari V, Bernasconi V: Meningocele spurius following hemilaminectomy in a case of lumbar disc hernia. J Neurosurg 18: 709-710, 1961.

12. Patronas NJ, Jafor J, Brown F: Pseudomeningoceles diagnosed by metrizamide myelography and computed tomography. Surg Neurol 16: 188-191, 1981.

13. Rinaldi İ, Peach Jr WF: Postoperative lumbar meningocele. J Neurosurg 30: 504-507, 1969.

14. Rinaşdi I, Hodges TC:Iatrogenic lumbar meningocele: Report of three cases. J neurosurg Psycchiatry, 33: 484-492, 1970.

15. Rothman RH, Simeone F: The spine. Vol II. Philadelphia:WB Saunders Company. 1992, pp 1885-1991.

16. Schumacher HW, Wassmann H, Podlinski C: Pseudomeningocele of the lumbar spine. Surg Neurol, 29: 77-78, 1988.

17. Teplick JE, Peyster RG, Teplick SK, Goodman LR, Haskin ME: CT identification of postlaminectomy pseudomeningocele. AJNR 14: 1203-1206, 1983.