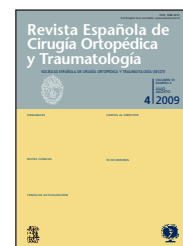


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LETTERS TO THE EDITOR

Meningeal syndrome and cauda equina syndrome following surgery for L5-S1 lumbar disc herniation: evolution at 2 years

Síndrome meníngeo y síndrome de cola de caballo tras cirugía de hernia discal lumbar L5-S1: evolución a los dos años

Sr, director:

The formation of a spinal subarachnoid hematoma (SSAH) can cause a meningeal irritation disorder. This disorder was first described in detail by Plotkin et al in 1966 but the term "spinal subarachnoid hematoma" was not adopted definitively until 1984. SSAH accounts for 15.7% of all spinal hematomas found by Kreppel¹. Its appearance is usually related to iatrogeny, tumors, arachnoiditis and congenital or acquired coagulopathies. When symptoms seem indicative of SSAH, the diagnostic technique of choice, apart from physical examination, is magnetic resonance (MR)². Initial treatment is corticoid (dexamethasone) administration³. If symptoms do not improve in the first 4 hours, the corticoid must be evacuated⁴.

Cauda equine syndrome, as a complication following lumbar spine surgery, has an incidence of 1.4%⁵. It usually originates in a hemorrhage in the epidural space. However, there have been reports of lumbar subarachnoid hemorrhages causing a cauda equina syndrome. Symptoms consist of low-back pain and lumbosacral nerve root compression. The diagnostic method of choice, apart from physical examination, is MRI². Surgery is the treatment of choice. Nonetheless, it has not been shown that surgical success is directly related to a short time-to-surgery⁵.

The patient is a 42-year-old male without a history of systemic coagulopathy or anticoagulant medication. Two hours after a discectomy carried out to address an L5-S1 disc herniation, he presented with confusional syndrome, meningeal syndrome and lower-back pain with cauda equina syndrome.

Intraoperatively, an injury to the dural sac occurred, which was repaired by means of suture and fibrin (Tissucol). The Valsalva maneuver was used to evaluate closing it during surgery.

The patient was treated with immediate intravenous corticoid therapy (4mg dexamethasone every 8 hours) as

soon as symptoms began, in anticipation of the magnetic resonance study. At 4 hours from the beginning of treatment a gradual remission of symptoms was observed, which opened the possibility of administering surgical treatment. MR showed a subarachnoid hematoma that went from the fifth lumbar to the twelfth thoracic vertebra (figure 1). Medical treatment was provided until complete symptom remission at 3 weeks. After 2 years, the patient is now symptom-free and no alterations have been noted at physical examination. Nevertheless, MR (figure 2) shows the formation of localized walls inside the subdural space, which appears deformed.

The joint appearance of signs of meningeal irritation and cauda equina compression provoked by a subarachnoid syndrome following surgery for disc herniation is rare. The combination of both syndromes tends to portend poor prognosis with uncertain results. A collection of blood in the subarachnoid space in the thoracolumbar area, with intact dural and arachnoid membranes, compresses the nerve roots of the cauda equina and irritates the arachnoid membrane. The patients' symptoms depend on its volume and location. Some authors make a distinction between a subarachnoid hematoma and subarachnoid hemorrhage, although symptoms in both cases are very similar, on the basis of the fact that the symptoms of the former are more acute than those of the latter. The origin of the bleeding that causes the subarachnoid hemorrhage has not been clearly established because this anatomic situation is usually avascular. Some authors have reported that there may be some bleeding, albeit not of significant proportions, related with ankylopoietic spondylitis, arachnoiditis, spinal tumors, malformations and disc herniations. In some cases, it may be related to congenital or acquired coagulopathy or simply to an increase in intra-abdominal pressure following surgery in a patient that has sustained a vascular lesion³. The case presented herein had no coagulopathy and had not taken antiinflammatory medication or acetylsalicylic acid for 2 months, but sustained an intraoperative dural sac lesion in the L5-S1 space. Given the anatomic location of the lesion, there is a possibility that the periradicular vessels may have been damaged, which would explain the subsequent bleeding as induced hypotension was not being used during surgery. Injury to the dura mater was repaired through suture and synthetic fibrin, which prevented the leakage of cerebrospinal fluid (CSF) and blood. This favored the proximal flowing of blood into the subdural space, also facilitated by the circulation of CSF and the impossibility of spontaneously draining the hematoma.

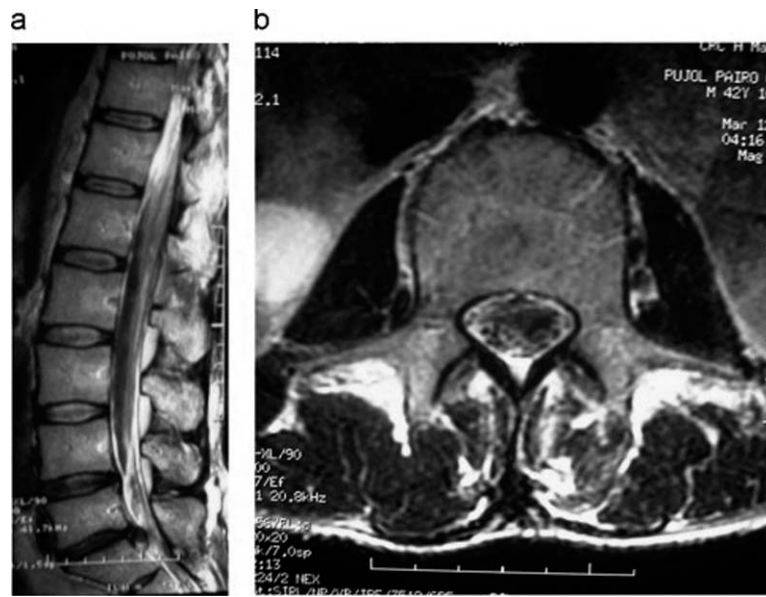


Figure 1 Sagittal and axial T2-weighted images showing invasion of the anterior intradural space by a hypointense T2-weighted image with slight secondary intrathecal deformity of the nerve roots.

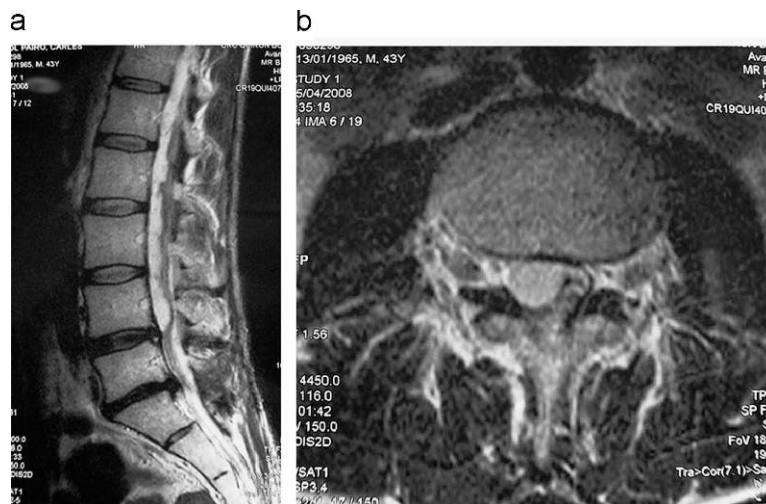


Figure 2 Axial and sagittal T2-weighted images captured 2 years later show persistence of intradural invasion with a change in the signal which, at that point, has become hyperintense. Nerve roots are clustered together and slightly thickened.

The clinical symptoms of subarachnoid hematoma are different from that of epidural. Hematoma. The blood underneath the arachnoid membrane produces signs of meningeal irritation, back of neck stiffness, opisthotonos, nausea, vomiting, alterations of conscience, pseudoepileptic seizures and mood changes. When the bleeding originates in the lumbar area, apart from the symptoms mentioned, there may also be acute low-back pain, nerve root pain or even cauda equine syndrome, as in the case presented herein³. We have found no reference in the literature that shows this complication. In this case, clinical symptoms are attributable to the location and extent of the hematoma.

Neuro-radiologic diagnosis is not easy. One way of obtaining it is through myelographic examination. Currently MRI is the technique of choice. Distinguishing subarachnoid

from epidural hemorrhage through MRI can be challenging. It can only be done with this technique when the blood is surrounded by CSF, which separates it from the internal aspect of the dura mater⁴, as in the case described here. Blood products present a highly specific and sensitive signal on MRI. An isointense signal on T1-weighted images and the hypointense-isointense T2-weighted images provide us with a diagnosis. Axial views show the "diffusion" of the subdural hematoma through the nerve roots (fig. 1a and b).

There is no consensus in the literature as to what should be the treatment of choice. For some, treatment of subarachnoid hemorrhage is always surgical because of the poor prognosis of the lesions^{1,4}. For others, indication of surgery depends on the clinical response of the medical treatment applied. This medical treatment is not specified in

any of the papers consulted. In our study, we used intravenous dexamethasone for one week at the doses mentioned above. Subsequently, as symptoms remitted, we changed to a descending dosing regimen until the third week.

Treatment of cauda equina syndrome must be surgical, but its clinical result is not directly linked to the time elapsed between diagnosis and surgery. Differences in the SF-36 questionnaire, the ODI and the Low Back Outcome Score between operated and nonoperated patients were found only after 2 years from presentation⁵. The patient's favorable clinical evolution on initial corticoid administration made it possible to defer surgery and continue with the same treatment regimen.

The patient's satisfactory clinical evolution cannot be attributed solely to corticoid therapy since there are no explicit references in the literature to this matter. According to Domenicucci⁴, this favorable evolution could be due to the CSF "clearance effect"; indeed, as a result of the blood being in contact with the CSF, the former resorbs before coagulation. Another factor to be considered is the volume of bleeding, on which we have found no references in the literature. The current images of wall-formation and deformity shown on MRI (fig. 2) have not resulted in any symptoms.

The case presented herein shows the possibility of meningeal syndrome and cauda equina syndrome to occur simultaneously following surgery for lumbar disc herniation, as a result of a combined injury to the peri-radicular vessels and the dural sac in the course of lumbar discectomy. In certain circumstances, patients may recover from this complication with medical treatment, without the need of surgery to drain the hematoma.

Conflict of interests

The authors have declared that they have no conflict of interests.

References

1. Kreppel D, Antoniadis G, Seeling W. Spinal hematoma: a literature survey with meta-analysis of 613 patients. *Neurosurg Rev.* 2003;26:1-49.
2. Shimada Y, Sato K, Abe E, Miyakoshi N, Tsutsumi Y. Spinal subdural hematoma. *Skeletal Radiol.* 1996;25:477-80.
3. Ryota M, Soso N, Kaxuya U. Lumbosacral subdural Hematoma. Case report. *Neurol Med Chir (Tokyo).* 2006;46:258-61.
4. Domenicucci M, Pamieri A, Paolini S, Ruso N, Occhiogrosso G, Di Biasi C, et al. Spinal subarachnoid hematoma our experience and literature review. *Acta Neurochir (Wien).* 2005;147:714-50.
5. McCarthy MJ, Aylott CE, Grevitt MP, Hegarty J. Cauda equina syndrome: factors affecting long-term functional and spinetoric outcome. *Spine.* 2007;15:207-16.

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Cystic metastasis of squamous cell carcinoma of the cervix to the gluteal region. A case report

Metástasis quística de carcinoma escamoso de cérvix en la región glútea. A propósito de un caso

Sr, director:

Soft tissues comprise approximately 55% of body mass, but blood metastases in them are rare¹. This low incidence may be attributed to several factors, such as pH changes, metabolite accumulation and local temperature in soft tissue areas¹.

In this study, we present a case of metastasis of a cervical carcinoma that is extremely unusual both because the cystic structure it acquired and because its location in the gluteal region.

The patient is a 64-year-old female who developed a large-scale neoplasm in the posterolateral region of her right gluteus with no evidence of pain or other local or systemic symptoms.

The patient had a history of thrombocytopenia with concomitant splenomegalia, diagnosed in February 2006. In

March 2004 she had been diagnosed with a squamous cell carcinoma of the cervix, graded at stage IIB following the classification of the International Federation of Gynecologic Oncologists (FIGO); with a local extension to the bottom of the pelvic girdle and the vagina. Treatment consisted in brachytherapy and external radiation, which succeeded in providing local control of the disease.

One year later she developed bone metastasis to the metaphyseal area of the left proximal humerus, which was treated with prophylactic Hackett-type nailing and cementing of the osteolytic site, in addition to external radiation therapy of the affected area and chemotherapy. All this means that at the time of presentation the patient had a diagnosis of stage IV squamous cell carcinoma with a history of more than 3 years.

The patient was referred to the Musculoskeletal Oncology Department of our hospital by the Medical Oncology Department in May 2007 because she presented with a 15 × 15 × 10 cm neoplasm in the posterolateral region of her right gluteus. Several ultrasound studies had been performed previously which seemed to reveal the presence of an encapsulated hematoma. An echo-doppler was performed, which showed a vascular tangle surrounding a cystic cavity.

The case was followed up by the Medical Oncology Unit for 6 months, during which a slow but relentless growth of the neoplasm was observed. However, its etiology could not