Clinical Article

CT-guided percutaneous aspiration of Tarlov cyst as a useful diagnostic procedure prior to operative intervention

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Summary

Tarlov or perineural cysts are lesions of the nerve root most often found in the sacral region. Several authors recommend surgical treatment of symptomatic Tarlov cysts. However, successful surgical treatment is dependent on appropriate patient selection.

In this article, we report three cases of a sacral perineural cyst, causing sciatic pain, and emphasize the usefulness of CT-guided percutaneous aspiration as an important diagnostic and prognostic procedure prior to definitive operative treatment.

Keywords: Tarlov cyst; perineural cyst; percutaneous aspiration; operative therapy.

Introduction

Tarlov or perineural cysts are lesions of the nerve root most often found in the sacral region. Their prevalence has been estimated to be 4.6% [9]. Although the majority of these cysts are asymptomatic, they can produce radicular pain, urinary dysfunction, or headache [6, 9, 17–19]. Several authors recommend surgical treatment of symptomatic Tarlov cysts [1, 6, 18, 20]. However, others show that patients do not always benefit from surgery [17]. Modern radiological techniques such as computed tomography (CT) and magnetic resonance imaging (MRI) have improved the recognition of these lesions and allow minimally invasive procedures such as percutaneous CT-guided needle aspiration.

We present three cases of a sacral perineural cyst, causing sciatic pain resistant to pharmacological treatment and physiotherapy and emphasize the usefulness of CT-guided percutaneous aspiration as an important prognostic procedure prior to definitive operative treatment.

Case reports

Clinical symptoms and signs

Case 1

A 24-year-old woman presented with a 3-year history of increasing lumbo-sacral and leftsided sciatic pain, which worsened on standing, walking, and postural changes and was relieved by sitting. Repeated trials of analgesic agents combined with physical therapy failed. Due to her symptoms, she was unable to carry on her job as a postwoman. There was no previous history of trauma to the back.

The neurological examination was normal with the exception of a lightly disturbed sensory function of the left S1-dermatome.

Case 2

A 46-year old woman with pre-existing multiple sacral perineural cysts had undergone right interlaminar fenestration L5/S1 for a lumbar disc prolaps in October 1998 and spinal fusion at the level L3–L5 in July 2000 in other hospitals. On her present admission, she complained of deep seated lumbosacral pain radiating into the right leg with numbness which was accompanied by urinary urgency. Her symptoms were worsened by sitting. Trials of analgesic agents and physical therapy failed. Physical examination was unremarkable except for decreased peri-anal sensibility to light touch and pinprick.

Case 3

A 35-year old woman presented with a 2-year history of deep seated lumbo-sacral pain. Six months prior to admission, the pain increased and involved the posterior thigh bilaterally, especially in the sitting position. Neurological examination was unremarkable except for disturbed
sensory function of the left S2-dermatome. MRI scans showed a large sacral cystic lesion with slight increase over the course of the last 2 years.

**Radiological findings**

Plain radiographs of the lumbar spine showed no local bony changes except for a congenital defect of the right S1-lamina in case 1. In all cases, the cysts demonstrated low signals on T1-weighted images and high signal on T2-weighted images, similar to cerebrospinal fluid. MRI demonstrated in case 1 cystic masses involving both S1-nerve roots with 1.1 cm diameter on the left and 0.7 cm on the right side (Fig. 1). In case 2, multiple sacral cystic masses were found. In this patient, the largest cystic lesion with 2.2 cm diameter was found at the right S2-nerve root. In case 3, a large cystic lesion of the left S2-nerve root with 3 cm diameter was found. In case 2 and 3, the sacral canal was occupied by the large cysts.

Myelography using water-soluble contrast material revealed in all cases delayed filling of the cysts, and the caudal sacral nerve roots were displaced dorso-laterally.

CT scanning several hours after myelography disclosed round-to-oval cystic lesions with contrast enhancement in all cases, with marked bone erosion of the sacral canal in case 2 and 3 (Fig. 2). In case 2 and 3, the cyst contained about 30 ml clear fluid. Thereafter, the cysts collapsed completely in all cases, and the first two patients experienced rapid relief of pain for 2 weeks in case 1 and 3 days in case 2, respectively. In case 3, after cyst aspiration headache appeared immediately and 2 days later the pain relief occurred for several weeks.

In case 1, MRI scans three months later showed slight increase in cyst diameter of 1.2 cm. Because of the reappearance of painful symptoms due to the regrowth of the perineural cysts shown in MRI, operative treatment was carried out in case 1 and 2.

Surgical treatment for case 3 is planned.

**Operation**

After skin incision and exposing of the involved sacral lamina under the operative microscope, sacral interlaminar fenestration at the level S1 in case 1 and sacral laminectomy at the level S1–S2 in case 2 was performed. In case 1, the cyst originated from the ventral surface of the left S2-nerve root and compressed the thecal sac (Fig. 3). The cyst was dissected carefully and opened laterally. After resection of the cyst wall, the neck was ligated, and the remaining cyst wall was wrapped round the S1-nerve root. TachoComb® was placed over the S1-nerve root. In case 2, the dorsally located, large cyst of the right S2-nerve root was opened and the cyst wall resected. No lumbar drain was used in either case and no bedrest was prescribed.

**Histopathology**

Paraffin sections were stained with Hematoxylin and Eosin (H&E) and Elastica van Gieson (EvG). In both cases, fibrous tissue with a sparse