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# Differential Diagnostic Problems of Spinal Meningioma. Report of Two Cases

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**Abstract.** Back pain and sciatica are mostly caused by degenerative spine and disc disease. Spinal tumours are rare and can coexist with a degenerative spine causing a late diagnosis. The authors present two clinical cases of spinal meningioma treated for a long period of time – two and four years respectively – as a degenerative spine disease. MRI was the method of investigation for the correct tumour diagnosis in one case and revealing a synovial cyst in the other case. Although spinal meningioma in one case was diagnosed preoperatively, in the other case there were two pathology combinations – synovial cyst and meningioma diagnosed during the operation. Long lasting back pain resistant to analgesic treatment and the presence of neurological symptoms may cause one to suspect a spinal tumour. Such patients need to be consulted by a specialist and examined by MRI – a sensitive method for spinal tumour detection.

**Keywords:** spinal meningioma, spinal tumour, differential diagnosis of spinal disease, synovial cyst.

Neurologijos seminarai 2009; 13(41): 160–163

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## INTRODUCTION

Spinal meningioma represents 25% to 46% of tumours of the spine [1, 2]. They mostly occur in the thoracic region in middle aged women [1, 3–6]. Patients typically present with pain, sensory loss, weakness, and sphincter disturbances. Developments in neuroimaging have contributed to earlier and safer diagnoses concerning spinal disease [7–9]. However, in times of low healthcare budgets patients will not use every available diagnostic tool. Thus, in the case of lumbago and sciatica, the most likely cause will be disc herniation. The most readily available methods in these cases will be x-ray examination and CT scan of the involved level. Middle aged women commonly have degenerative spine disease with more or less remarkable disc protrusions [10–12], and the symptoms of undiagnosed meningioma can be explained as a pain syndrome of vertebral origin.

One of the degenerative spine disease complications is formation of synovial cyst. Synovial cysts, when reaching 1–2 cm diameter, present clinical signs – low back pain and sensor or motor disorders, but as there coexist other signs of degenerative spine disease – spinal stenosis, osteoarthritis, and disk pathology – the cause of the clinical syndrome is multifactorial.

There exists a typical delay between the onset of symptoms of spinal meningioma and the diagnosis. The mean

duration of symptoms prior to the diagnosis is 1 to 2 years [1, 7, 10]. We report two cases of patients with spinal meningioma who were unsuccessfully treated for degenerative spine disease. One of the patients after MRI investigation was diagnosed with meningioma of the spine preoperatively; the other tumour was found intraoperatively which coexisted with synovial spinal cyst diagnosed by MRI preoperatively.

## DESCRIPTION OF THE CASES

### Case 1

52-year old woman with progressive back pain irradiating to both legs and perineum over 2 years. In the last two months urine incontinence developed. The patient was admitted for conservative treatment to a regional hospital 10 months ago. A CT scan of L3–S1 (not shown) revealed degenerative changes maximum at L4–L5 level, interpreted as lumbar spinal canal stenosis. Despite analgesic medication, massage and physiotherapy, the neurological status worsened. The patient was consulted by a spinal surgeon of a leading traumatological and orthopaedic hospital in Riga. The conclusion of the specialist was that she had spondylarthrosis with pain syndrome and radiculopathy, no indications for operative treatment, and intensive analgesic therapy was prescribed. However, despite the treatment the patient's status worsened. Pain was present in recumbent position and at night. Paresis of the left leg started, urine incontinence took place. The woman was admitted to our clinic at her own behest, due to worsening sit-

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Fig. 1. MRI of the thoracolumbar region revealing intradural extramedullary tumour at Th12-L1 level with conus medullaris compression.

uation. Neurological deficit was present, hypo aesthesia in both legs S1-S4 level, peripheral paresis of the left leg, mostly distal, urine incontinence. Such syndrome was estimated as conus medullaris and cauda equina damage and could not be explained as the result of spinal canal stenosis.

MRI of the thoracolumbar region was performed. MRI showed (Fig. 1) intradural extramedullary mass of Th12-L1 level with conus medullaris compression; meningioma was suspected. After complete microsurgical excision of meningioma the patient was pain-free for the follow up period of 1 year, urine incontinence regressed; slight weakness of the leg was present for 6 months, sensory symptoms not present.

### Case 2

The patient, a 53-year old woman, complained about severe low back pain irradiating to the left leg. Disease duration 4 years, different analgesics used. 6 months ago CT of the spine was performed (Fig. 2). Slight scoliosis, lumbar hyperlordosis, spondylosis segments L3-S1 was found, arthrosis L3-L4, L4 disc dorsal median protrusion, L5 disc slight paramedian protrusion contacting S1 root. Analgesic therapy gave no result; the pain worsened and became irresistible. On admission to our clinic the patient had walking difficulties due to the low back pain, kept flexor pose. Positive root tension symptom left side 200 angle. Hypoesthesia in L3 root zone, motor function intact, urinary function normal. MRI of the L3-S1 region was performed (Fig. 3). Radiologist's conclusion: left side at L3-L4 region pathological structure, close to intervertebral joint detected with T2 high signal, T1 with liquor isodense signal. After contrast injection, contrast enhance-

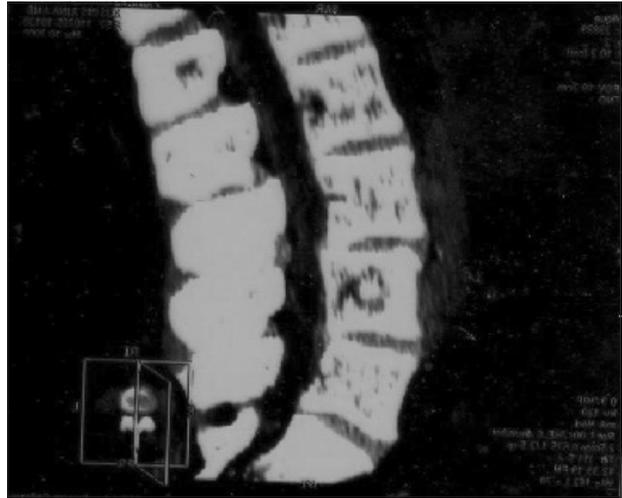


Fig. 2. CT of the lumbar region revealing spondylosis segments L3-S1, L4 disc dorsal median protrusion, L5 disc slight paramedian protrusion.



Fig. 3. MRI of the lumbar region revealing pathological structure spinal epidural synovial cyst close to L3-L4 intervertebral joint, arthrosis of facet joints.

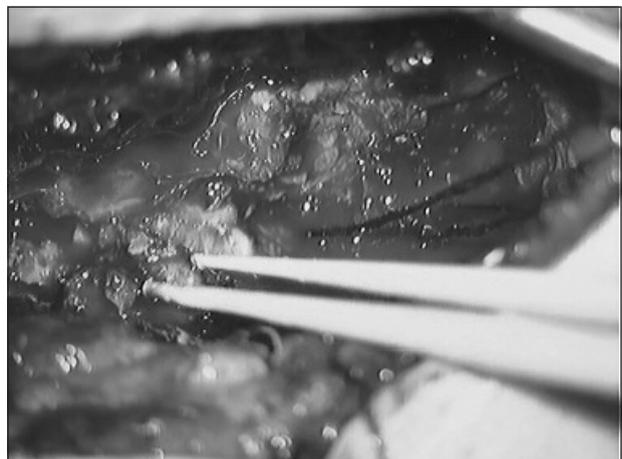


Fig. 4. Operative photograph demonstrating tumour removal.

ment was present round the structure. Such a finding was estimated as synovial cyst at L3–L4 level. During operation synovial cyst and intradural tumour were resected (Fig. 4). Histological examination of the issues verified meningoteliomatose meningioma. The patient had good postoperative recovery with absolute regress of pain syndrome.

## DISCUSSION

Differential diagnosis of degenerative spine disease and spinal tumours has been the subject of interest of several authors [10, 11, 13]. Symptoms of tumour can mimic clinical picture of disc herniation or lumbar stenosis. In literature there are several case reports of patients diagnosed with a spinal tumour after long periods of treatment for degenerative spine disease [10, 11, 13]. There are also cases of spinal tumour when patients were performed discectomies and remaining pain was considered as failed back surgery syndrome [10]. Our reported cases are interesting from the differential diagnostical point of view between spinal tumour and degenerative spine disease. Both patients had pain syndrome in low back region irradiating to legs, very common to degenerative spine. CT investigations in both cases showed degenerative spine disease with disc protrusions and spinal stenosis. Suspicion for a more severe diagnose in both cases was caused by the fact that not withstanding intensive analgesic and physical treatment the pain intensified. The degree of stenosis and spinal degenerative changes were not so significant as to give such a severe and drug resistant pain syndrome. Growth of neurological syndrome in the first case, including paresis, segmental sensation loss, and incontinence were the symptoms that could not be explained only by spinal degenerative changes, thus there was a need to suspect another reason. CT examination in both cases failed to be informative. CT is considered not sensitive enough for spinal tumours especially if not performed at the level of pathology. Magnetic resonance imaging, the method of choice for spinal tumour [1, 7, 10], detected the lesion in both cases, with diagnosed meningioma in the first case and structure synovial cyst in the other case.

Meningioma was not directly diagnosed, retrospectively there could be found indirect signs of coexisting tumour by intensive contrasting of dural sack wall so called dural “tail” medially and caudally from synovial cyst. This sign is not typical of synovial cyst. Recognition of two different structures – synovial cyst and contrasted dura, is hard due to high epidural fat tissue signal in T1 sequence. For more precise radiological diagnostics fat saturation sequences are recommended [14].

In the second case, the tumour was found intraoperatively. In both cases the length of the disease until its operative solution was from 2 to 4 years in comparison with other authors’ data of up to 2 years [1]. The follow up of the first patient during the 1st year showed a good recovery

with a slight neurological deficit. In the other case, in only 2 months after the operation no pain and no neurological deficit were present.

In addition to the clinical problems of differential diagnosis of the referred two cases, we have come to the conclusion that socio-economic factors and health care organisation problems are also involved. Both patients were from rural districts, treated for a long period of time by general practitioners, and not consulted by a neurologist or neurosurgeon. CT investigation was adequately used if spinal degenerative disease was suspected and CT available in the regional hospital. MRI investigation is not available in regional places; they have long waiting lists and experience a shortage of money.

Gauta:  
2009 08 10

Primta spaudai:  
2009 09 15

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**NUGAROS SMEGENŲ MENINGEOMŲ  
DIFERENCINĖS DIAGNOSTIKOS PROBLEMOS.  
DVIEJŲ ATVEJŲ APTARIMAS**

**Santrauka**

Degeneracinės stuburo ligos yra viena iš dažniausių nugaros skausmo priežasčių. Nugaros smegenų navikai – gana reta patologija. Ji gali būti greta degeneracinės stuburo ligos ir taip apsunkinti diagnozės nustatymą. Straipsnio autoriai aprašė du nugaros smegenų meningeomų klinikinius atvejus, kai ilgą laiką – atitin-

kamai dvejus ir ketverius metus – buvo gydoma degeneracinė stuburo liga. Pirmuoju atveju, nugaros smegenų meningeomos diagnostikai padėjo MRT tyrimas. Diagnozė buvo nustatyta iki operacijos. Antruoju atveju, atlikus MRT, nustatyta sinovijinė cista, o operacijos metu pašalinti sinovijinė cista ir intardurinis nugaros smegenų navikas. Visais atvejais, esant užsitęsusiam, nepasiduodančiam konservatyviam gydymui nugaros skausmui bei neurologiniam deficitui, nustatant diagnozę, būtina įtarti navikinio proceso galimybę. Svarbiausias nugaros smegenų navikų diagnostikai – MRT tyrimas. Tai jautrus ir tikslus metodas šiems navikams nustatyti.

**Raktažodžiai:** nugaros smegenų meningeoma, nugaros smegenų auglys, sinovijinė cista, diferencinė diagnostika.