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Case Series

Tarlov cysts among sportspersons: a case series

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ABSTRACT

Tarlov cysts (also known as meningeal cysts or perineural cysts) are fluid-filled sacs that are usually found at the bottom of the spine (the sacrum). The cysts appear in the roots of the nerves that grow out of the spinal cord. Majority of the tarlov cysts are often asymptomatic and hence not considered as part of the differential diagnosis for the treatment of low back pain. However, in some cases, tarlov cysts may be large enough to be symptomatic and as a result be a cause of disability and distress especially in physically active individuals. We report 5 cases of symptomatic tarlov cysts in physically active individuals with clinical presentations of persistent disabling low back pain with radiating pain in some individuals. In the first 3 cases, the tarlov cysts were large enough and the patients had to undergo ultrasound guided aspiration of the cysts while the other 2 cases were treated with epidural injections and conservative management.

Keywords: Tarlov cysts, Ultrasound guided aspiration, Epidural injection

INTRODUCTION

Tarlov cysts, which are more accurately termed as perineural root sleeve cysts, were first discovered by Isadore Max Tarlov in 1938 when he incidentally found 5 cases during an autopsy.[1] According to Nabor's classification, Tarlov cysts are classified as type - II meningeal cysts, defined as sacral extradural spinal meningeal cysts with spinal nerve root fibers, filled with cerebral spinal fluid (CSF), between the layers of the perineurium and endoneurium near the dorsal root ganglion, without any connection with the perineural subarachnoid space.[2,3] The cysts are frequently located in the spinal canal of the S1-S5 region.[3,4] Symptomatic Tarlov cysts are rare, as most cases are asymptomatic and are usually found incidentally.[4,5] A recent meta-analysis of 13,266 subjects found that the global pooled prevalence of Tarlov cysts was 4.2%. It was less common in Asia, where the prevalence was 3.3%. There was female predominance (5.8%), compared with male (3.0%). However, only 15.6% of those with Tarlov cysts were symptomatic.[6] Common clinical presentations include low back pain, radicular pain in the relevant dermatomal distribution, or motor weakness. Rarely, the cysts can cause cauda equina syndrome or myelopathy if they are located above the conus medullaris.[7]

In this case series, we report 5 cases of symptomatic Tarlov cysts to increase the awareness about this rare entity and the need to consider it in the differential diagnosis in patients presenting with symptoms of low back pain.

CASE SERIES

Case 1

A 20-year-old recreational badminton player, presented to our OPD clinic in April 2022 with a persistent disabling low back pain with radiation to the buttock region for more than 1 year. She described the pain as severe and dull-

aching in nature, with a self-reported score of 7/10 using the visual analogue scale (VAS). The pain was aggravated by movements such as bending down, prolonged sitting and prolonged walking. There were no associated symptoms such as neurological weakness, other joint pain, fever, or weight loss. There was no recent trauma or fall prior to the onset of the back pain. Her bowel and bladder were functioning normally. On examination, SLRT was 70 degrees on the right side; EHL- 4/5 (R); sensory was reduced L5, S1 on the right. The pain was not relieved by rest, oral paracetamol (acetaminophen) or NSAIDS. Epidural corticosteroid injection under C arm guidance was tried but not much improvement was seen. The patient underwent an magnetic resonance imaging (MRI) scan and was found to have bilateral Tarlov cysts in the sacral S2, S3 region of her spine with the larger cyst measuring 14×12×8 mm. Following opinion with a neurosurgeon, the patient underwent ultrasound guided aspiration for the larger cyst. This was followed by relative rest for a period of 7 days and progressive back and core strengthening exercises. The patient experienced significant improvement in her symptoms following the above interventions. The patient is pain free and has been able to return to playing badminton again without any discomfort.

Figure 1: MRI LS spine sagittal view showing bilateral Tarlov cysts in the sacral S2, S3 region.

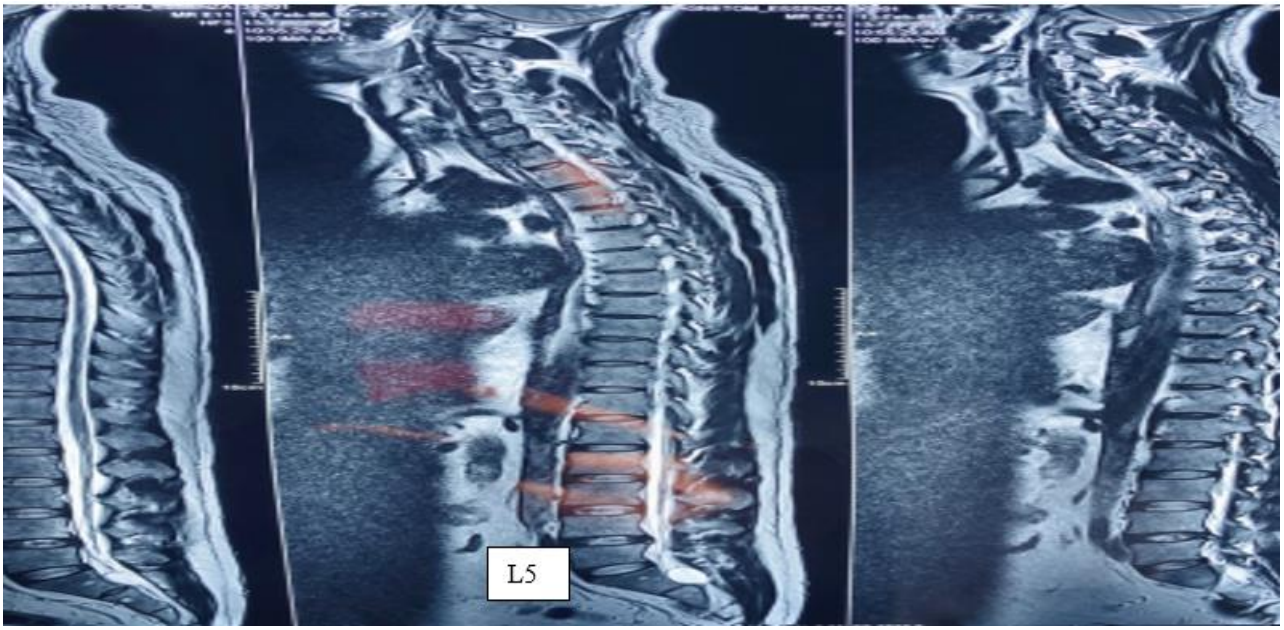

Figure 2: MRI whole spine sagittal view showing a single tarlov cyst at the L5/S1 level.

Case 2

In June 2022, a 37-year-old male, cricketer presented with low back pain radiating to the lower limbs. He described the pain as persistent, dull-aching in nature and persistent with a self-reported score of 8/10 using the VAS. The pain was progressively worsened with activities such as bowling, prolonged standing in the field. He also had a history of claudication but no bowel or bladder symptoms. There was no recent trauma or fall prior to the onset of the back pain. Examination revealed a diminished ankle jerk, weakened foot dorsiflexion, and hypoesthesia in the distribution of L5 and S1 dermatomes on the left. Radiographs were normal. MRI was done and a single tarlov cyst measuring 16×14×12 mm at the L5/S1 level encroaching into the left neural foramina and compressing both L5 and S1 exiting nerve roots. The patient underwent ultrasound guided aspiration of the cyst and a single epidural injection was given under C-arm guidance. Post the intervention, the patient had significant improvement of pain and claudication. The patient underwent rehabilitation with strengthening of the back and core muscles. At present, the patient is pain free and has been able to return to sports without any discomfort.

Case 3

A 32-year-old female wushu athlete, presented to our OPD clinic in September 2022 with low back pain for a duration of more than 1 and half years. She described the pain as moderate in intensity, dull-aching in nature with the pain being progressively worsened during training activities. The pain score was 7/10 using the Visual Analogue Scale (VAS). The pain was occasionally associtated with tingling and weakness of the left lower limb. She gave a history of fall while riding her scooty prior to the onset of the back pain. There was no history of other joint pain, fever, or weight loss. Her bowel and bladder were functioning normally. On examination, SLRT was found to be 70 degrees on the left side with EHL of 4/5 on the left. No neurological deficit was found with mild tenderness over the left sciatic nerve. Plain radiographs of the spine were normal. Patient underwent an MRI scan and was found to have a single tarlov cyst measuring 26×14×12 mm in the S2 region of her spine**.** The patient underwent an ultrasound guided aspiration of the cyst after failure of conservative management. 1-week post intervention, patient reported a VAS pain score of 2/10. She underwent a rehabilitation program which included low back and core strengthening exercises and she was gradually allowed to return to training. 2 months post the intervention, the patient has returned to competitive sport and is presently pain free.

Case 4

A 29-year-old male cricketer, presented to our OPD clinic in January 2023 with chief complaint of left sided buttock pain associated with the tingling and numbness of the left lower leg and foot of more than 4 months. He described the pain as mild in intensity, dull-aching in nature but causing an uneasy and persistent discomfort during physical activity. There was no history of fall or trauma. On examination, SLRT was negative with EHL of 5/5 bilaterally. No neurological deficit was found with mild tenderness over the left sciatic nerve. Plain radiographs of the spine were normal. Patient underwent an MRI scan and was found to have prolapsed intervertebral disc at L4-L5, L5-S1 level with associated finding of a single tarlov cyst measuring 18×12×10 mm in the S2 region of his spine**.** The patient was treated with NSAIDS and epidural corticosteroid injection and this was followed by rehabilitation exercises carried out at home. 1-month post intervention, patient reported improvements in his symptoms and has gradually resumed his training without much discomfort. In this case, the tarlov cyst turned out to be a coincidental finding and asymptomatic to the patient and no active intervention was done for the same.

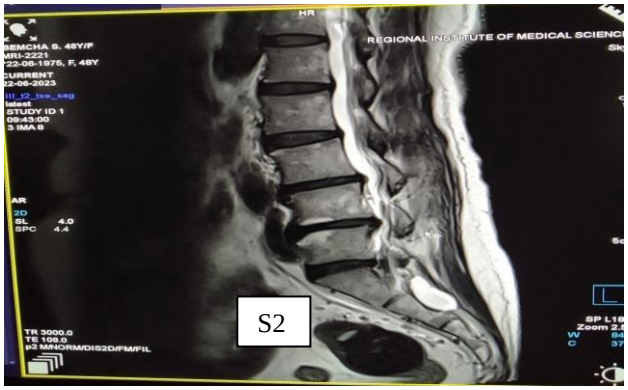

Figure 3: MRI LS spine sagittal view showing a single tarlov cyst in the S2 region of her spine.

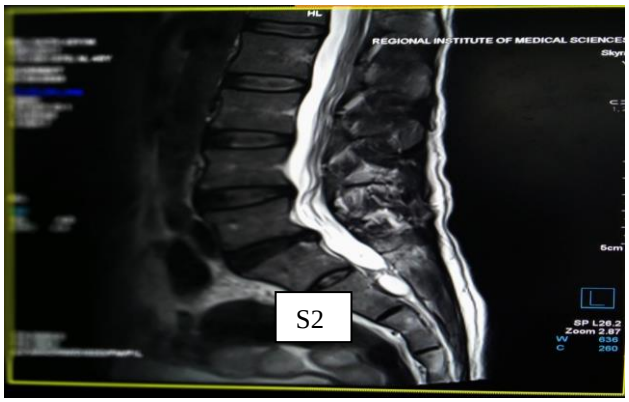

Figure 4: MRI LS spine sagittal view showing prolapsed intervertebral disc at L4-L5, L5-S1 level with associated finding of a single tarlov cyst in the S2 region of his spine.

Case 5

A 33-year-old male footballer, presented to our OPD clinic in April 2023 with chief complaint of low back pain radiating to the lower limbs. The pain was associated with occasional tingling and numbness of the lower limbs for a

duration of 5 months. There was no recent trauma or fall prior to the onset of the back pain but patient gave an alleged history of lifting heavy weights in the gym. Examination revealed a diminished ankle jerk, EHL- 4/5 (L), and hypoesthesia in the distribution of L5 and S1 dermatomes on the left side. Radiographs were normal. MRI was done and mild disc bulge at L5-S1 was seen along with a single tarlov cyst measuring 14×10×8 mm at the level of S3. The patient received single epidural injection followed by physiotherapy and rehabilitation exercises. The patient reported improvements in his complaints and has gradually returned to training and is currently pain free.

Figure 5: MRI LS spine sagittal view showing mild disc bulge at L5-S1 along with a single tarlov cyst measuring at the level of S3.

DISCUSSION

Low back pain affects 85% population at some point in their lives.[8] Persistent low back pain can severely hinder the daily functioning of active individual. Tarlov cysts are often under diagnosed cases of persistent low back pain especially in females. The prevalence of Tarlov cysts has been estimated to be 1 to 4.6% among the general adult population. 70% of the cysts are asymptomatic, 17% have an additive effect on other pathological entities, and only 13% are symptomatic. The clinical presentation of symptomatic Tarlov cysts is non-specific, and it can be similar to other pathologies involving the disc and lumbosacral spine.[7] Typical clinical presentations include low back pain, sciatic radicular pain (sacral nerve root pain), coccyx pain, or perineal pain.[9] The onset of symptoms can occur suddenly or gradually, and it can be exacerbated by coughing or a change in position such as standing or bending down.[10] Red flag symptoms caused by compression of the caudal nerve root by the Tarlov cysts, such as lower limb weakness, neurogenic claudication, sensory changes across the gluteal area, perineal area, lower extremities, bowel and bladder dysfunction, vaginal or penile paraesthesia, and sexual dysfunction have also been reported. Tarlov cysts are difficult to diagnose in the primary care setting because of limited knowledge about the condition and because many of the symptoms can mimic other, more common disorders.

Most primary care physicians would not consider the possibility of Tarlov cysts in the differential diagnoses of patients presenting with low back pain, which is a common presentation in primary care. MRI is the imaging modality of choice to diagnose Tarlov cysts as it provides significantly greater soft tissue contrast. The pathogenesis of Tarlov cysts is unclear. In a published article in 1970, Tarlov suggested that trauma could be a potential aetiology for the perineural cysts, as 4 out of 7 of his patients had a history of trauma.[3] Tarlov proposed that haemorrhage into the subarachnoid space can result in a buildup of red cells, which then impedes the drainage of veins in the perineurium and epineurium, leading to rupture and subsequent formation of cysts.[3] However, Fortuna et al thought that the perineural cysts were congenital in origin, caused by arachnoid proliferations within the root sleeve, as the majority of the patients in their study did not have a history of trauma. Treatment is indicated only when the cyst is symptomatic. The treatment modality for Tarlov cysts ranges from conservative management (with analgesia, regular follow up, and imaging), external cerebrospinal fluid drainage, percutaneous cyst drainage, percutaneous fibrin glue injection, insertion of a cyst-subarachnoid shunt, a cyst-peritoneal shunt or a lumboperitoneal shunt, simple decompression laminectomy, resection of the cyst neck, cyst wall resection and cyst imbrications.[11] However, there is little evidence on which surgical management is most effective or when it is indicated for symptomatic Tarlov cysts. More evidence is needed to establish which surgical modality is the most effective. A systematic approach to identifying red flags in patients presenting with severe low back pain is the key to diagnosing a potentially serious cause for this common presentation in primary care.

CONCLUSION

This case series aims to highlights that even though rare, Tarlov cysts must be considered as a part of the differential diagnosis of persistent low back pain especially in females. The clinical presentation of this condition mimics many other common disorders and due to close proximity to the lower pelvic region, patients may be easily overlooked misdiagnosed with herniated lumbar discs, arachnoiditis and gynaecological conditions in females. We hope that this case series helps to increase awareness about the prevalence of Tarlov cysts in the general population as well as sportsperson and thereby identify and treat the patients

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