L5 to S1 Tarlov Cyst Found Incidentally in Presence of Progressively Worsening Right Foot Pain: A Case Report
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Abstract

CASE DESCRIPTION: 32-year-old male involved in a motor vehicle accident 15 years ago sustaining multiple trauma who presented with chronic, intractable right foot pain. The pain was located along the dorsum of the right foot with a pins-and-needles sensation. During the past 1.5 years, the frequency of his right foot pain increased from once a month to being constantly present. Percutaneous spinal cord stimulator was implanted to alleviate the patient's right foot pain, but he was unable to tolerate its usage. MRI of lumbar spine revealed a 1.3 x 1.8 x 5.0-centimeter cystic mass in the spinal canal at the L5 to S1 vertebral levels representing an intrasacral meningocoele or Tarlov cyst. Pertinent physical examination findings consisted of no Achilles tendon reflex on the right, decreased sensation to light touch, vibration, and pinprick distal to right patella, absent sensation to light touch, vibration, and pinprick distal to right ankle, and 0/5 strength with right ankle dorsiflexors and plantar flexors. Cystic mass at the L5 to S1 vertebral levels could be impinging on the right L5 and S1 nerve roots, leading to neuropathic pain in the patient's right foot. Patient had already seen two neurosurgeons regarding the cystic mass and was told that operating to remove the cystic mass would be highly risky.

DISCUSSION: Tarlov cysts are cerebrospinal fluid-filled sacs located in the spinal canal, usually in the S1 to S4 region, and can be distinguished from other meningeal cysts by their nerve fiber-filled walls. 15% to 30% of Tarlov cysts are symptomatic with the most common symptoms being pain and sexual and bladder dysfunction.

CONCLUSIONS: Tarlov cysts can enlarge over time, leading to increasingly frequent and intractable pain, especially in the lower extremities.

Introduction

In 1936, Tarlov first described the cysts named after him after he identified 5 cysts in 30 adult patients on autopsy. He later described symptomatological cases of perineal cysts that were successfully treated with sacral laminectomy and cyst excision. Since then, cases have been reported of Tarlov cysts causing coccycgodynia, sacral insufficiency fractures, sacral pain, and sacral radiolopathy.

Tarlov initially described perineal cysts to be primarily localized to the posterior sacral or coccygeal nerve roots, with most being found on the right side. These cysts were also rarely found in the thoracic spine. These cysts usually are found at the junction of the posterior root and dorsal ganglion and are located between the perineum and the endoneurium. They are filled with cerebrospinal fluid and have a tendency to increase in size over time. Enlarging Tarlov cysts can compress the exiting nerve roots, causing such symptoms as pain, weakness, paresthesias, sexual dysfunction, and bowel and bladder dysfunction.

Histoanatomic examination reveals an oval wall that is composed of a vascular connective tissue and an inner wall that is lined with flattened arachnoid. Part of the lining consists of nerve fibers and occasionally ganglion cells. No clear consensus exists on the origin of Tarlov cysts.

Figure 1. Gross image of reacted Tarlov cyst

pathogenesis of Tarlov cysts. A potential etiology is trauma with resultant hemorrhage into the subarachnoid space. This hemorrhage may cause an accumulation of red cells, which blocks drainage of the veins in the perineurium and epineurium. This impaired venous blood from the perineurium and epineurium results in rupture of these veins with subsequent cyst formation. A congenital etiology has also been proposed stemming from arachnoidal proliferations within the root sleeve and subsequent obstruction of normal cerebrospinal fluid flow. Although the exact pathogenesis of these cysts remains uncertain, the actual mechanism of cyst formation has been described as a “ball valve” mechanism that occurs secondary to stenosis at the ostium of the nerve root sheath with passage of cerebrospinal fluid into the cyst, but with restriction of its outflow, resulting in cystic dilation.

Diagnostics

Clinical symptoms of Tarlov cysts range from localized sacral pain to radicular-type pain patterns to coccycgodynia. Patients may also be asymptomatic without any physical findings. Complications of these cysts include sacral insufficiency fractures, weakness in related sacral myotomes, andbowel and bladder disturbances. In a study that looked at 500 sequential MRI scans of patients with low back pain, a 4.6% (23) prevalence was found. Of the 23 patients with Tarlov cysts found on radiologic imaging, only 3 (13%) were actually symptomatic with either local sacral pain or sacral radiculo- lopathy. Between 1948 and 1970, at least 69 cases of symptomatic spinal perineal cysts were reported. MRI is considered the imaging study of choice for identifying Tarlov cysts. Compared to CT scan, MRI provides better resolution of tissue density, absence of bony interference, multiplanar capabilities, and is also noninvasive. Since these cysts are filled with cerebrospinal fluid, a low signal is seen on T1 and a high signal is seen on T2.

Pain films may show bony erosions of either the spinal canal or the sacral foramina. Myelographic studies using oil-based (sophonates) contrast result in delayed filling of these cysts, while studies using water-soluble (methazolamide) contrast allow for a more rapid filling of these cysts. Unenhanced CT scans may reveal sacral erosions, asymmetric epidual fat distribution, and cystic masses that are isodense with cerebrospinal fluid if an MRI cannot be performed, a CT myelogram can be done.

Figure 2. Sagittal T2-weighted MRI image of Tarlov cyst
Source: http://nilemarker1.wordpress.com/2015/05/22/tarlov-cyst

Treatment

Treatment of Tarlov cysts includes both conservative and surgical approaches. Conservative treat- ments consist of judicial use of pain medication and a physical therapy program with emphasis on McKenzie-type exercises, strengthening of pelvic stabilizers and abductors, and stretching of ham- strings. Surgical treatment consists of sacral laminectomy with cyst drainage, which is followed by bipolar cautery to shrinks the cysts. Since nerve fibers are often found in the cyst wall, disturbances, as well as infection, spinal headache, and cerebrospinal leakage. CT-guided percutaneous drainage has also been used to treat 5 symptomatic patients with Tarlov cysts. Patients had relief that ranged from 2 to 3 weeks up to 8 months. Two patients underwent repeat drainage of their cysts with no associated sequelae. Risks for this type of drainage include infection, spinal headache, and cerebrospinal leakage.

Conclusion

Tarlov cysts are cerebrospinal fluid-filled sacs located in the spinal canal, usually in the S1 to S4 re- gion, and can be distinguished from other meningeal cysts by their nerve fiber-filled walls. 15% to 30% of Tarlov cysts are symptomatic with the most common symptoms being pain and sexual and bladder dysfunction. Tarlov cysts are also a rare cause of low back pain or lumbosacral radiculopa- thy and should be considered in the differential diagnosis when radicular symptoms are present. They can enlarge over time, leading to increasingly frequent and intractable pain, especially in the lower extremities. MRI is the radiologic study of choice for visualizing these cysts. CT-guided percuta- neous drainage is an alternative treatment to extensive sacral laminectomies with cyst excision. Simple monitoring may also be acceptable in minimally symptomatic individuals.

References