Case 12
Tarlov Cyst

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History

A 75-year-old male with recurrent left foot sarcoma presents with lower back/hip pain (Fig. 12.1).

Diagnosis

Tarlov cyst

Findings

- T1-weighted hypointense and T2-weighted hyperintense two adjacent lesions centered in the S2-3 neuroforamen bilaterally (thin arrow).
- Lesion is hyperintense on STIR indicating that it is fluid filled (curved arrow).
- PET/MR fusion showing no FDG uptake in the lesion consistent with a Tarlov cyst.

Discussion

Tarlov cysts, which are also called sacral perineural cysts, are collections of cerebrospinal fluid between layers of the nerve root sheath near the dorsal root ganglion. They are considered type II spinal meningeal cysts as they are extradural and contain neural tissue, as opposed to type I which would be extradural without neural tissue, and type III which would be intradural. Several etiologies have been postulated, including congenital, traumatic, and inflammatory factors which cause thickening and diverticula formation of the arachnoid membrane. Since these lesions do not usually change during life, they are more likely developmental in etiology. These lesions are often incidental and asymptomatic; however potential symptoms may arise as they accumulate more fluid under high pressure through a ball valve mechanism (similar to a Baker's cyst). These rare symptoms include lower back, radiating lower extremity pain, and impaired sphincter or sexual function. Definitive treatment involves surgical resection but is rarely performed.

MRI is particularly useful in identifying the simple cystic nature of a Tarlov cyst with homogeneous high intensity on T2-weighted and lower than muscle intensity on T1-weighted images. MRI provides better soft tissue resolution compared to CT and can evaluate communication with the cyst and the subarachnoid space using flow sensitive sequences. Cysts that have free communication are usually asymptomatic as less pressure is exerted on adjacent nerve roots. Currently, it is rare to perform myelographic studies to demonstrate communication and filling characteristics of the cyst.

R. Gupta et al., *PET/MR Imaging*, https://doi.org/10.1007/978-3-319-65106-4_12

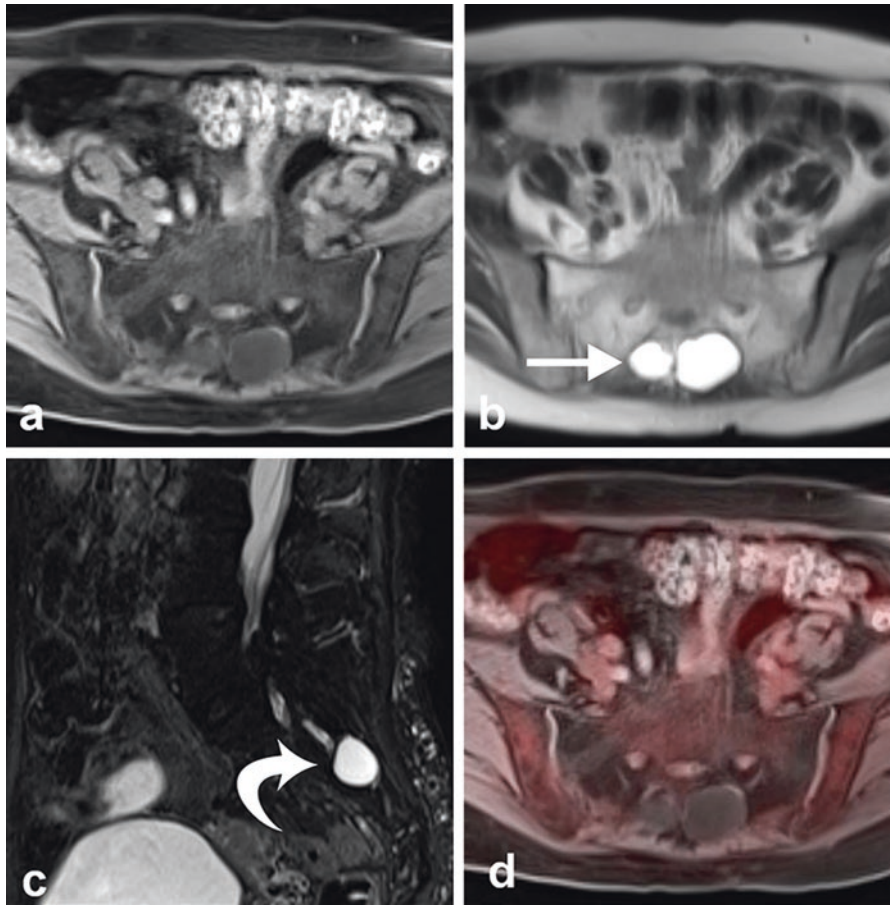

Fig. 12.1 T1 radial VIBE with fat suppression axial (**a**), T2 HASTE axial (**b**), STIR sagittal (**c**), and PET/MR T1 radial VIBE with fat suppression axial fusion (**d**)

These cysts are not metabolically active on PET imaging. Complications of the cyst such as rupture or infection might elicit increased FDG activity. Other cystic lesions of the sacrum such as chordomas and chondrosarcomas may have malignant features that could have increased activity leading to further clinical investigations.

Suggested Reading

Davis SW, Levy LM, LeBihan DJ, Rajan S, Schellinger D. Sacral meningeal cysts: evaluation with MR imaging. Radiology. 1993;187(2):445–8.

Nadler SF, Bartoli LM, Stitik TP, Chen B. Tarlov cyst as a rare cause of S1 radiculopathy: a case report. Arch Phys Med Rehabil. 2001;82(5):689–90.