Case 12725

Lipomyelocele
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Section: Neuroradiology
Area of Interest: Spine
Procedure: Computer Applications-Detection, diagnosis
Imaging Technique: MR
Special Focus: Congenital Case Type: Clinical Cases
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Patient: 30 years, male

Clinical History:
A 30-year-old male patient presented with subcutaneous swelling in the lumbar region that was present since birth, now gradually increasing in size for the past 3 years. The swelling was painful, otherwise no discharge, gait disturbances or any other systemic complains were present.

Imaging Findings:
MR study revealed a high signal intensity lesion in the dorsal aspect of the lumbo-sacral region in both T1W and T2W images (Fig. 1a, b), along with a low-lying tethered spinal cord that had few roots herniating through the defect at cauda equina. Axial view in T2W images showed the spinal cord to be dysraphic and contained within the thecal sac along with protrusion of few roots through the defect (Fig. 1c) suggesting closed type of spinal dysraphism. T1W fat suppressed sequences in axial (Fig. 2a) and sagittal view (Fig. 2b) shows suppressed signal from the lesion, which confirms that the lesion is fat-containing and gives a definitive diagnosis of lipoma along with herniation of few roots at cauda equina through the defect.

Discussion:
A. Lipomyelocele (Lipo-fat, myelocele-herniation of spinal cord or its roots through a defect) is a closed type of spinal dysraphism (with a skin covering) which portrays the amalgamation of presence of lipoma along with spinal cord herniation through a defect. The condition has an embryological origin in which there is premature separation of surface ectoderm prior to formation of neural tube with mesodermal ingression. It can also be seen in coalition with focal spina bifida or continuity of the dorsal cleft with the central canal of the cord [1].
B. The condition usually presents as a subcutaneous swelling in the thoraco-lumbar region (most common), sometimes in conjunction with other spinal deformities like scoliosis, butterfly or hemi-vertebra or spina bifida and clinical complaints of weakness in the legs with gait disturbances, bowel-bladder incontinence and feet asymmetry. Therefore, accurate and early diagnosis is of prime importance for early surgical intervention to avoid belated detrimental effects [2].
C. MRI is the imaging modality of choice for evaluation in this complex group of disorders as it delineates the complete anatomy of spine and detects the presence of other anomalies [3]. Since lipomas are fat-accommodating lesions, they appear hyperintense in both T1W and T2W images, which gets suppressed in fat saturated sequences. The condition also displays the tethering of spinal cord along with its low-lying position (mostly at the level of L2-L3) and its herniation with or without roots through a defect; however, it is contained within the thecal sac itself. Other close differentials are lipomeningomyelocele (lipoma with expansion of CSF space with cord herniation), myelocystocele (spina bifida containing cord substance) and meningocele (protrusion of meninges) which are all
absent in this case, thus substantiating and narrowing the final diagnosis of lipomyelocele only.

D. Surgical management is the preferred treatment including rectification of tethered cord, preservation of neural elements and resection of lipomatous component to minimize the symptoms. Risks of surgery include CSF leakage, neurological deterioration and incomplete wound healing, infection and meningitis. They can be minimized by folic acid, Vit B12 and antibiotic supplementation, which proves to be effective in almost all cases followed by repeat MRI for better anatomical detail.

E. Any case presenting with subcutaneous swelling at the back should not be ignored owing to the absence of clinical features, but should be thoroughly investigated with MRI and treated as early as possible including follow-up MRI study.

**Differential Diagnosis List**: Lipomyelocele, Lipomeningomyelocele, Myelocystocele, Meningocele

**Final Diagnosis**: Lipomyelocele

**References**:


**Figure 1**

Description: T1W image of the lumbar spine sagittal view shows high signal intensity lesion on dorsal aspect of lumbo-sacral region along with protrusion of spinal cord roots with tethering effect at cauda equina level. **Origin:** Jitendra K, Dept of Radiology, CUSMC, Surendranagar
Description: T2W image sagittal view shows high signal intensity lesion at the same location with protrusion of spinal cord roots with tethering effect. Origin: Jitedra K, Dept of Radiology, CUSMC, Surendranagar
**Description:** T2W axial view of lumbo-sacral region shows herniation of spinal cord with everted lamina through the defect (arrow) and contained within the thecal sac. **Origin:** Jitendra K, Dept of Radiology, CUSMC, Surendranagar
Description: T1W-fat saturated image axial view shows that the lesion is hypointense, suggesting suppression of fat implying the lesion to be fat-containing along with herniation of roots of spinal cord through the defect (arrow). Origin: Jitendra K, Dept of Radiology, CUSMC, Surendranagar
Description: T1W fat sat image of the spine sagittal view shows decreased signal intensity of the lesion suggesting fat suppression along with herniation of spinal cord roots through the defect. Origin: Jitendra K, Dept of Radiology, CUSMC, Surendranagar