

Musculoskeletal diagnosis

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Findings

Please refer to page 45 of the June 2010 issue of the *SAJR* (<http://www.sajr.org.za/index.php/sajr/article/view/460/370>) for the clinical details and images. We congratulate Dr Hanief Moosa (3rd-year radiology registrar at the University of the Witwatersrand) for his near spot-on diagnosis, for which he receives an award of R1 000 from the RSSA. Dr Misser elaborates below on the condition and its radiological signs.

Diagnosis

A single modality is depicted with pre- and post-gadolinium MRI sequences. The medullary cone biconvex mass is iso-intense to subcutaneous fat on all sequences. Near-complete fat saturation (Fig. 3) of the lesion indicates predominant fatty content. T2-weighted intermediate- and low-signal components (Figs 1b and 2b), some of which are strand-like centrally and more solid at the inferior aspect of the mass, suggest encasement of nerve roots and partly fibrous content respectively. The cord is secondarily tethered, the filum terminale is thickened (>2 mm) and there is evidence of previous wide laminectomies at L2/3. Minimal post-gadolinium enhancement (Fig. 3b) is noted of the lesion periphery and the meninges, probably related to post-surgical granulation. No syringohydromyelia, neurenteric cyst or meningocele could be demonstrated. Incidental note was made of the L2/L3 disc herniation with mild thecal sac impression.

Radiological diagnosis of intradural lipoma and differential diagnosis of dermoid tumour, teratoma or complex mucinous myxopapillary ependymoma was offered. Intra-operatively, the mass was shown to be almost completely fatty in content with intratumoral nerve root incorporation and solid fibrotic component documented. No teeth or calcification could be shown at histology.

Final diagnosis of intradural fibrolipoma located at the conus with tight filum terminale and cord tethering was made.

Discussion

Spinal lipomas, including intradural lipomas and lipomyelocoeles, result from premature separation of the neuro-ectoderm from the cutaneous ectoderm, allowing mesenchymal fat-forming cells to enter the spinal canal. Fibrolipomas of the filum terminale are usually more caudally located and generally much smaller. Associated incomplete retrogressive differentiation results in tethered cord syndrome. Isolated fibrolipomas of the filum terminale are usually asymptomatic. Fibrolipomas of the conus medullaris in adult patients with tight filum and associated cord tethering have been previously reported.¹ These patients present later with progressive lower limb weakness, muscle atrophy and spasticity. Incontinence is a late phenomenon.² In adults, a precipitating factor can lead to increased pressure on the already tethered cord, resulting in them presenting with worsening symptomatology.³ In the index patient, disc herniation at L2/L3 may be implicated.

The imaging of these fat-containing tumours is enhanced by using the appropriate sequences to demonstrate the true content of the mass. Fat saturation sequences using STIR or saturation bands enables a narrowing down of the differential diagnosis. MRI also allows the radiologist to advise the neurosurgeon on the extent of the mass, presence of fibrous content (which may be adherent to cord, cauda equina or meninges), cystic component, occult dysraphism or neurenteric communication. Therefore, here we illustrate that a single radiological modality, by the use of varied sequences, allows the radiologist to arrive at a clinically accurate differential diagnosis.

1. Freund M, Thale A, Hutzelmann A. Radiologic and histopathologic findings in a rare case of complex occult spinal dysraphism with association of a lumbar fibrolipoma, neurenteric cyst and tethered cord syndrome. *Eur Radiol* 1998;8:624-627.
2. Raghavan N, Barkovich AJ, Edwards M, Norman D. MR Imaging in the tethered cord syndrome. *AJR* 1989;152:843-852.
3. Gupta SK, Khosla VK, Sharma BS, Mathuriya SN, Pathak A, Tewari MK. Tethered cord syndrome in adults. *Surgical Neurology* 1999;52(4):362-369.