A rare case of epidermoid cyst in the dorsal cord with intramedullary and intra-dural components: Significance of diffusion weighted sequence in the preoperative stage

Clinical History:
A 23-year-old woman complained of bilateral lower limb vibration sensations for the last six months. Her symptoms were slowly progressive. Her past medical and surgical history was not significant.

Imaging Findings:
The patient underwent MRI lumber spine examination in another department and was referred to us for whole spine MRI. MRI of the spine (Fig. 1 and 2) revealed cystic lesion at T2-T3 level. The lesion had an intramedullary and intradural component. It was iso to CSF on T1W and T2W sequences. There was no associated oedema. Subsequently (Fig. 3 and 4) diffusion-weighted axial sequences were performed in addition to routine axial T1W and T2W sequences. This revealed that the lesion was diffusion-restricted.

A diagnosis of epidermoid cyst was made on the basis imaging features, preoperative features of pale white irregular soft tissue mass and histopathological features of a cyst lined by stratified squamous epithelium without associated adnexae. The cystic components comprise keratin flakes.

Discussion:
A. Background: Epidermoid cyst of the spinal cord is a rare condition. Congenital cysts are more common than acquired lesions. [1] Congenital originating from displaced ectoderm inclusions possibly may be associated with a defective closure of the dural tube. For acquired cysts, the thoracic region (between D4-D8 levels) is the favourite site followed by the lumbar cord, and these lesions rarely involve the cervical region. [2]
B. Clinical Perspective: The diagnosis is often based on operative and histological findings. Magnetic resonance imaging (MRI) can reduce the delay in diagnosis, and evidence has accumulated that these lesions may be preoperatively suspected [3].

Imaging Perspective: On MRI, epidermoid cysts are characterised by variability of signal intensity, absence of oedema in surrounding tissue and fairly well-defined limits. Mostly, these are extramedullary, however, rare examples are entirely intramedullary. Few case reports in the literature show epidermoid and dermoid cysts partly embedded within the spinal cord. Macroscopically, these are glistening white or cream-colored cystic lesions reflecting their contents of either flaky keratin or greasy sebaceous material. Histopathology shows a lining of keratinising squamous epithelium in both lesions, however, the wall of dermoid cysts contains sebaceous glands.
and hair follicles [4]. The feature of diffusion restriction confirms the diagnosis.

C. Outcome: The treatment of choice is total resection [5].

D. Take Home Message, Teaching Points: Diffusion-weighted sequence is the investigation of choice for intramedullary epidermoids, and surgical excision of these lesions results in the improvement of neurological functions.

**Differential Diagnosis List:**
- Epidermoid cyst with intramedullary and extramedullary intradural components.
- Arachnoid cyst, Ependymoma with exophytic component

**Final Diagnosis:**
- Epidermoid cyst with intramedullary and extramedullary intradural components.

**References:**
Description: Sagittal T1W image without contrast shows lesion in the cord at T2-T3 level which is isointense to CSF. Origin: Fatima Mubarak, Department of Radiology, Aga Khan University Hospital, Karachi.
Description: Sagittal T2W image shows lesion which is iso to hypointense. Origin: Fatima Mubarak, Department of Radiology, Aga Khan University Hospital, Karachi.
Figure 2

a

Description: Axial T2W shows an intradural and intramedullary lesion which is hyperintense on T2W.
Origin: Fatima Mubarak, Department of Radiology, Aga Khan University Hospital, Karachi.

b

Description: Axial T1W shows an intradural and intramedullary lesion which is hypointense on T1W.
Origin: Fatima Mubarak, Department of Radiology, Aga Khan University Hospital, Karachi.

c

Description: Axial post-contrast image shows iso-intense lesion with no post-contrast enhancement.
Origin: Fatima Mubarak, Department of Radiology, Aga Khan University Hospital, Karachi.
Figure 3

Description: DWI and ADC map shows diffusion restriction in the lesion. Origin: Fatima Mubarak, Department of Radiology, Aga Khan University Hospital, Karachi.