Intradural extramedullary epidermoid cysts are rare tumors especially those not associated with spinal dysraphism. We report 3 cases of spinal intradural extramedullary epidermoid cysts. In all the cases, the lesion was situated at dorsal level. The clinical features, MRI characteristics and surgical treatment of such rare intradural extramedullary benign tumors are discussed and relevant literature is reviewed.

**Key words** : Spinal, Subdural, Extramedullary, Epidermoid, Cyst.

**Introduction**

The genesis of dermoid and epidermoid cysts is related to an anomalous implantation of ectodermal cells during closure of the neural tube between the 3rd and 5th weeks of embryonic life. Repeated lumbar punctures have sometimes been responsible for these cysts especially in children who have undergone numerous lumbar punctures for treatment of tuberculous meningitis. Most series do not distinguish between subdural and intramedullary epidermoid cysts. Spinal subdural epidermoid cysts are rare and should be distinguished from intramedullary cysts, as total excision is possible in subdural cysts and prognosis is better than in intramedullary cysts.

**Case Reports**

**Case 1** : A 13 year old boy presented with history of pain in back associated with paresthesias and stiffness of both lower limbs of 2 months duration. There was no history of trauma. Clinical examination revealed spastic paraparesis (grade 0 MRC grading). Sensory examination revealed loss of all modalities of sensation below L1 segment. There was no sacral sparing. Deep tendon reflexes were exaggerated in both the lower limbs. MRI showed evidence of an intradural lesion which was hypointense on T1 and hyperintense on T2WI. Patient underwent D5 to D7 laminectomy and total excision of epidermoid at D6. At surgery, a pearly white, flaky lesion was found after opening the dura. There was no intramedullary component. Arachnoid was intact. Post operatively his spasticity reduced, sensations improved and power in both the lower limbs improved gradually.

**Case 2 and 3** has similar findings. The details are given in Table I.

**Discussion**

The incidence of epidermoid cysts among intracranial tumors in most series is estimated to be 0.2-1%. It is much less among spinal tumors. Guidetti and Gagliardi reported a series of 3894 intracranial and 452 intraspinal tumors in patients of all ages and found an incidence of 0.8% for cranial epidermoids and 0.7% for spinal epidermoid cysts. Mano et al reported a series of 90 intraspinal epidermoid cysts out of which 39 were acquired and 51 congenital. In the last 6 years the author had 3 spinal subdural epidermoid tumors in their institution. The total number of spinal tumors operated in the same period were 360. According to Mano et al, spinal epidermoid tumors may be classified into five groups depending on whether the patients have : i) history of tuberculous meningitis, ii) history of lumbar puncture, iii) communicating dermal sinus, iv) history of trauma, v) or other disorders.

Acquired epidermoid cysts have been found years after single or multiple lumbar punctures and are thought to result from iatrogenic penetration of skin fragments. Lumbar region is the favourite site of the intradural extramedullary epidermoid cysts. In the present series, all the cases were found in dorsal region. Subdural origin of these epidermoid cysts in this series is probably due to ectopic cell rests that persist as a result of neural tube closure. The epidermoid cysts are generally characterized on MRI by variability of signal intensity between different cases and at times between the different parts of same cysts. Other features include the absence of edema in surrounding tissues, fairly well defined limits and peripheral enhancement on injection of gadolinium. The disparity in signal intensity most likely reflects variable lipid and protein composition in these lesions.

The symptoms and signs of these tumors do not differ from other spinal space occupying lesions. Since epidermoids grow through cisterns, the neural structures may be differentially involved. Many series do not distinguish between 'primary subdural' or 'intramedullary lesion with secondary subdural
spread. Only Lunardi\textsuperscript{8} makes an attempt to distinguish between intramedullary epidermoids and subdural epidermoids. The authors feel that spinal subdural epidermoids is a different entity. These are probably due to errors in fusion and inclusions. They also have a good plane of arachnoid separate from the spinal cord. Therefore they are easier to excise totally without injury to the cord.

References


Table I

Clinicoradiological and Treatment Details

<table>
<thead>
<tr>
<th>Case</th>
<th>Age/Sex</th>
<th>Complaints</th>
<th>Examination</th>
<th>Radiology</th>
<th>Treatment</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>13/M</td>
<td>Paresthesias and weakness of both lower limbs</td>
<td>Hypertonia in both lower limbs with hypoesthesia below L1, DTRs were brisk in both lower limbs</td>
<td>CT showed intradural extramedullary block at D6 level</td>
<td>Laminectomy and total excision in both lower limbs</td>
<td>Spasticity reduced and power improved</td>
</tr>
<tr>
<td>2.</td>
<td>12/M</td>
<td>Weakness of both lower limbs</td>
<td>Sinus at D12, Tone increased in both lower limbs, Power MRC grade 5, sensations normal, DTRs brisk in both lower limbs.</td>
<td>CT intradural hypodense lesion; MRI hypointense on T1, hyperintense on T2, intradural extramedullary right side D7-D11</td>
<td>Laminectomy and total excision</td>
<td>Spasticity reduced in both lower limbs</td>
</tr>
<tr>
<td>3.</td>
<td>30/M</td>
<td>Back pain with spastic paraparesis</td>
<td>Hypertonia of both lower limbs. Power MRC grade 3-4. Sensory loss below D10, DTR and brisk in lower limbs</td>
<td>Hypointense on T1, hyperintense on T2, at D7 (Fig. 1), intradural extramedullary</td>
<td>Laminectomy and total excision</td>
<td>Spasticity reduced, improved in both lower limbs</td>
</tr>
</tbody>
</table>

Fig. 1 : Extra medullary hyperintense lesion on T1WI.