Lumbar intradural lipoma
Published on 04.08.2003

DOI: 10.1594/EURORAD/CASE.2194
ISSN: 1563-4086
Section: Paediatric radiology
Imaging Technique: MR
Case Type: Clinical Cases
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Patient: 1 years, male

Clinical History:

Hyperpigmented patch over the lower lumbar spine.

Imaging Findings:

The patient presented with a hyperpigmented patch over the lower lumbar spine. On examination no neurological abnormality was found. Plain radiographs revealed no evidence of spina bifida. In view of the hyperpigmented lumbar patch, MRI was performed for further evaluation.

MR showed normal vertebral alignment and a normal craniocervical junction. The spinal cord appeared normal from the craniocervical junction to L1. There was an intradural lipoma closely associated which was located dorsally. It extended from L1/2 to L3/4 and continued dorsally as a fatty filum, tethered to the posterior canal at the inferior end plate of L4. It measured 2.7cm (superior-inferior dimension) and 0.9cm transversely. MR features were typical of lipoma, with high intensity on T1- and T2-weighted imaging, which was suppressed on fat-suppression sequences. No abnormal enhancement was seen on post-contrast images.

Discussion:

An intradural lipoma is a localised collection of fat within the intradural space of the spinal canal. It is connected to the spinal cord in a subpial location. The lipoma is on the surface of the cord, but it does not infiltrate into the intramedullary compartment. There is usually an exophytic component of the subpial lipoma.

The spinal cord is tethered by the lipoma and when the intradural lipoma occurs in the lumbrosacral area, the cord is low lying as well as tethered. The common locations are the cervical, thoracic and lumbosacral regions. The dura is commonly intact with a clear separation (tissue plane) between the intradural lipoma and the subcutaneous fat.

The vertebral anomalies associated with an intradural lipoma consists of spina bifida at one or several vertebral levels and depending on the size of the lipoma there may be enlargement of the spinal canal and bony erosion of its inner margins at the level of the lipoma.

An intradural lipoma is more common in male than female patients. The symptoms can occur at two main ages, with peaks in infancy and early childhood and middle age. If the lipoma is located in the lumbosacral region, the patient may present with signs of paresis or paralysis with sensory deficits of the lower limbs.

The embryogenesis of intradural spinal lipoma is unknown. Some accepted theories postulate that it is caused by:
1. Abnormal early separation of neuroectoderm from cutaneous ectoderm, which would allow paraxial mesenchyme into the spinal canal and to differentiate into fat.
2. Overgrowth of the fat cells, which normally can occur in the pia and arachnoid.
3. Overgrowth of the embryonic ectodermal rests, which can differentiate into fat.

The radiological modalities that help in diagnosis and evaluation of intradural lipoma are MR, ultrasonography, myelography and CT myelography. MRI is required in any case of cutaneous sacrolumbar anomaly (pigmented patch, angioma, lipoma). MRI is sufficient (after normal standard X-rays) to assess the diagnosis. Particularly, myelography and CT do not provide any further information. The whole of the cord should be examined and axial slices should be used to assess the situation of the filum. Ultrasonography can be used in infants to demonstrate a lumbosacral lipoma. The increased echogenicity of the lipoma tethering the low-lying, less echogenic spinal cord can be demonstrated well. The tissue plane between the subcutaneous fat and intradural lipoma is not usually demonstrated. T1-weighted MR images are excellent in demonstrating the high signal intensity of fat and the soft tissue plane between the subcutaneous fat and intradural lipoma. If the dysraphic bony defect is large, it will be seen on the axial image. If the spina bifida is mild and only involves one or two segments, it is usually not demonstrated.

**Differential Diagnosis List:** Lumbar intradural lipoma

**Final Diagnosis:** Lumbar intradural lipoma

**References:**


Bruce DA, Schut L. Spinal lipomas in infancy and childhood. Child's Brain 1979;5;192-203. (PMID: 378579)


Description: Sagittal MR image showing the lumbar intradural lipoma and tethered spinal cord. Origin: