AMSER Case of the Month
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Spinal Cord Lipoma Diagnosis and Management

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Patient Presentation

• 29 year old female presents to neurosurgery clinic complaining of years of progressive **low back pain with radiculopathy** and new onset of **intermittent urinary incontinence** over the past 6 months.

• On exam, patient has exaggerated lumbar lordosis with no tenderness to palpation or palpable dysraphism. Reflexes are 2+ and symmetric throughout. Strength is full and sensation to light touch is intact in the bilateral lower extremities.
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI lumbar spine without IV contrast</td>
<td>Usually Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>Radiography lumbar spine</td>
<td>May Be Appropriate</td>
<td>🞔��</td>
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<tr>
<td>MRI lumbar spine without and with IV contrast</td>
<td>May Be Appropriate</td>
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<tr>
<td>Bone scan whole body with SPECT or SPECT/CT complete spine</td>
<td>May Be Appropriate</td>
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<td>CT lumbar spine without IV contrast</td>
<td>May Be Appropriate</td>
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<tr>
<td>CT myelography lumbar spine</td>
<td>May Be Appropriate</td>
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<tr>
<td>MRI lumbar spine with IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>CT lumbar spine with IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>Discography and post-discography CT lumbar spine</td>
<td>Usually Not Appropriate</td>
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<td>CT lumbar spine without and with IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>FDG-PET/CT whole body</td>
<td>Usually Not Appropriate</td>
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This imaging modality was ordered by the neurosurgeon.
Findings (unlabeled)

Sagittal T1 sequence MRI

Sagittal T2 sequence MRI

Axial T2 sequence MRI

Axial T1 sequence MRI
The conus medullaris terminates in a large intradural lipoma.

Terminal expansile syringomyelia

The lipoma nearly fills the canal at L1-L2

The cauda equina is splayed around the lipoma
Dx:

Large intradural lipoma with associated expansile syringomyelia
Case Discussion

• Spinal cord lipoma is known to be a progressive disease, with clinical deterioration occurring in 40% of asymptomatic patients within a decade.

• In our patient with progressing symptoms, we can consider surgical management vs conservative management.

• Surgical management has traditionally been reserved for relief of severe symptoms.
  • Median time to neurological deterioration in as little as 19 months post-operatively
Further Imaging

• The diagnosis of spinal cord lipoma can be confirmed with fat saturation or STIR sequence MRI.
  • These chemically selective pulses cause the signal from fat to be nulled (saturated) while the water signal is relatively unaffected.
Classification

  - Consider extent of anatomical involvement of the lipoma
  - Good prognostication tool

<table>
<thead>
<tr>
<th>Pang’s</th>
<th>Morota’s</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Dorsal</td>
<td>Type 1</td>
<td>Only involves the dorsal spinal cord; conus medullaris is intact</td>
</tr>
<tr>
<td>Transitional</td>
<td>Type 1</td>
<td>Involves the dorsal spinal cord; cuts obliquely to involve the conus medullaris</td>
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<tr>
<td>Chaotic</td>
<td>Type 2</td>
<td>Involves the dorsal and ventral cord, with intertwined fat and neural tissue</td>
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<tr>
<td>Terminal</td>
<td>Type 3</td>
<td>Only involves the conus medullaris with potential minimal involvement of the caudal spinal cord</td>
</tr>
<tr>
<td>Terminal</td>
<td>Type 4</td>
<td>Only involves the filum terminale, with an intact conus medullaris</td>
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Our patient had a Transitional (Type 1) lipoma
Management

• Management of spinal cord lipomas has recently been a controversial topic in the literature.

• Management was traditionally *partial* resection.
  • Resulted in early recurrence, with median post-operative time to neurological deterioration reported around 20 months.

• Recently, Pang et al. reported near resolution of symptoms with minimal recurrence after *total* resection of lipomas.
  • 98.8% progression free survival at 20 years post-operation after total resection vs quick deterioration after partial.

Pang 2020
References:


