Imaging of Spinal Tumors
Confounding Cases of Surgical Importance

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Disclosures

• I have no relevant commercial relationships.

Consider 2 cases in each of these categories

• Spinal Cord
• Spinal Canal
• Spinal Column
SPINAL CANAL TUMORS

EITHER WITH OR WITHOUT ADJACENT SPINAL COLUMN INVOLVEMENT

Differential: Arachnoid Cyst, Abscess, Exophytic Intramedullary Tumor, Dermoid/Epidermoid, Neuroenteric cyst

Contrast study, DWI, and lack of either a transdural sinus or a sinus tract helps identify the lesion.
EPIDERMOID (Epidermoid Cyst) OF SPINAL CANAL

- Usually found in Lumbar Spine if acquired (post multiple LPs)
- Elsewhere congenital (epidermal rests)
- May / May not be associated with bone erosions
- Multi sequences including DWI critical

70 y.o. man with slowly progressive myelopathy and neck pain

[Images of MRI scans]
70 y.o. man with slowly progressive myelopathy and neck pain
Our Differential Diagnosis

- Mets with old blood------ but no primary, no other lesions, and no mixed blood signal
- Plasmacytoma------ good age but the history was a long one and there was no evidence of blood abnormalities
- Lymphoma------ always in the differential particularly since there was low T2 signal but signal was very low
- Giant cell tumor--- T2 signal not compatible with GCT
- ABC or osteoblastoma------ not likely
- Pleomorphic Sarcoma (Fibrohistiocytoma) --- our favored diagnosis

None of these

Pigmented Villonodular Synovitis

On microscopic examination of the tissue, there was a proliferation of synovial – like mononuclear cells with foamy macrophages, multinucleated giant cells, and histiocytes with intracellular hemosiderin. A pathologic diagnosis of PVNS was made based on these findings.
PVNS

- Any age/ both genders equally
- Locally aggressive and most commonly affect large joints (hips/ knees)
- Commonly have extra-articular extension
- CT------ destructive mass centered in the posterior elements. May show hyperattenuation with some bone sclerosis
- MR-------enhancing mass with marked hypointensity on gradient echo sequences

TUMORS OF THE SPINAL COLUMN

Middle age woman with low back pain / S1 radiculopathy
DX: Melorheostosis (monostotic)

Impression:
“Sclerotic Met vs. Fibrous Dysplasia vs. Paget’s Disease”

Lipoma of spinal canal
Incidental Melorrheostosis
Not path proven but classic in appearance

Melorrheostosis
- Sclerosing Dysplasia
- Etiology uncertain
- Unilateral hyperostotic undulating cortical bone... May be multi level or single level
- In spine --- rare and mistaken for sclerotic mets or degenerative disease.
- May be symptomatic or be incidental
21 y.o. with neck pain after minor trauma

Path Proven: Epithelioid Hemangioendothelioma

Epithelioid Hemangioendothelioma

- Rare endothelial vascular tumor first described in soft tissues
- When in the bones, most often in the long bones
- Bears similarity to an aggressive hemangioma
- Seems to straddle the line between benign and malignant; between an angiosarcoma and an hemangioma. Considered a low grade anaplastic tumor

NON CONTRAST ONLY DONE

Performed at an outside facility
SPINAL CORD TUMORS

Subependymoma
(not similar to other primary intramedullary tumors)

- Rare in the spinal cord (only 2% of all subependymomas— which themselves are rare)
- Eccentric in location (prob arise from ependymal rests)
- Minimal to no edema
- Iso to hypointense on T1 WIs
- Minimal to no enhancement
- Single to multilevel (limited)
- Microcystic degeneration (not CSF equivalent)
Intradural extramedullary tumor versus exophytic spinal cord tumor

? DX and location?

Importance to surgeon: Suspected tumor of the conus growing exophytically is operated on under hypothermia and high dose steroid premedication because of sensitivity of conus to manipulation and tumor removal.
Intradural extramedullary tumor versus exophytic spinal cord tumor

DX: exophytic ependymoma
Cavernoma with Hemorrhage into Central Canal Mimics an ependymoma
IOSS clearly defines surgical boundaries of mass