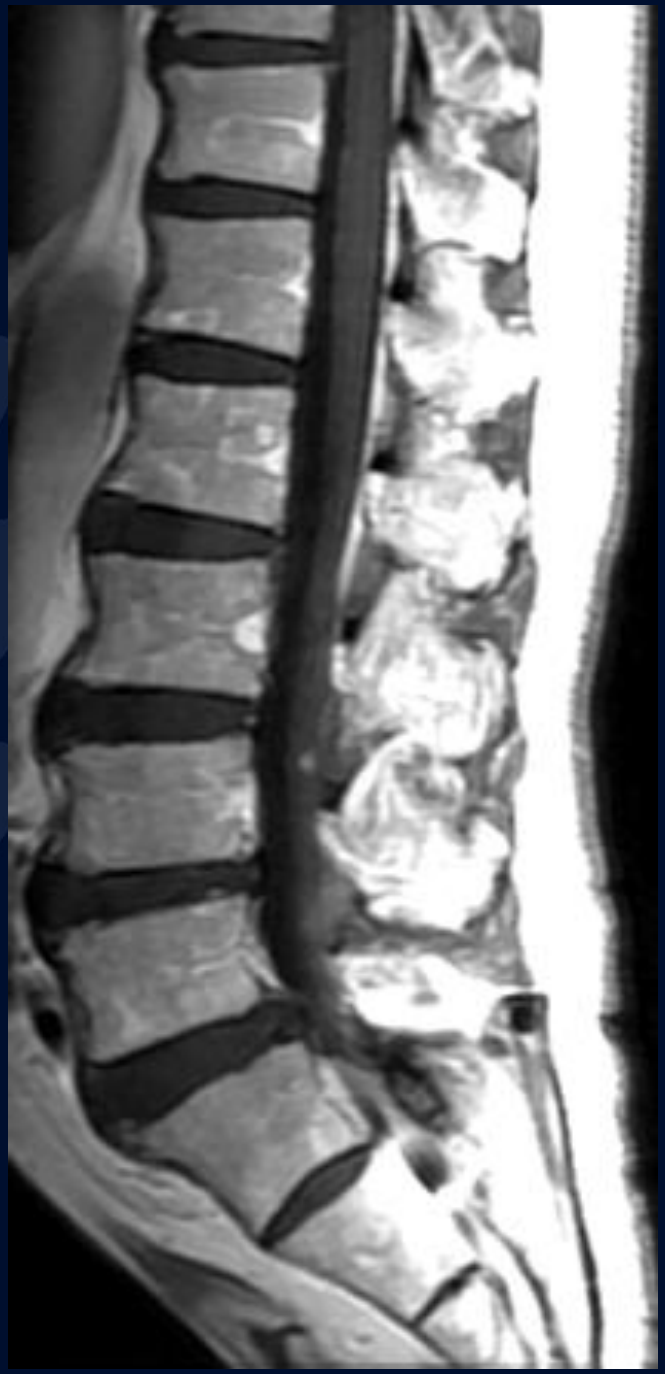
76 y/o male
with carcinoma of the Lung
for metastatic disease evaluation

Bogdan Lazurenko, BSc
Leo Wolansky, MD

UCONN HEALTH
RADIOLOGY

T1-Gd



UCONN HEALTH
RADIOLOGY

T1-Gd

UCONN HEALTH
RADIOLOGY

Dx?

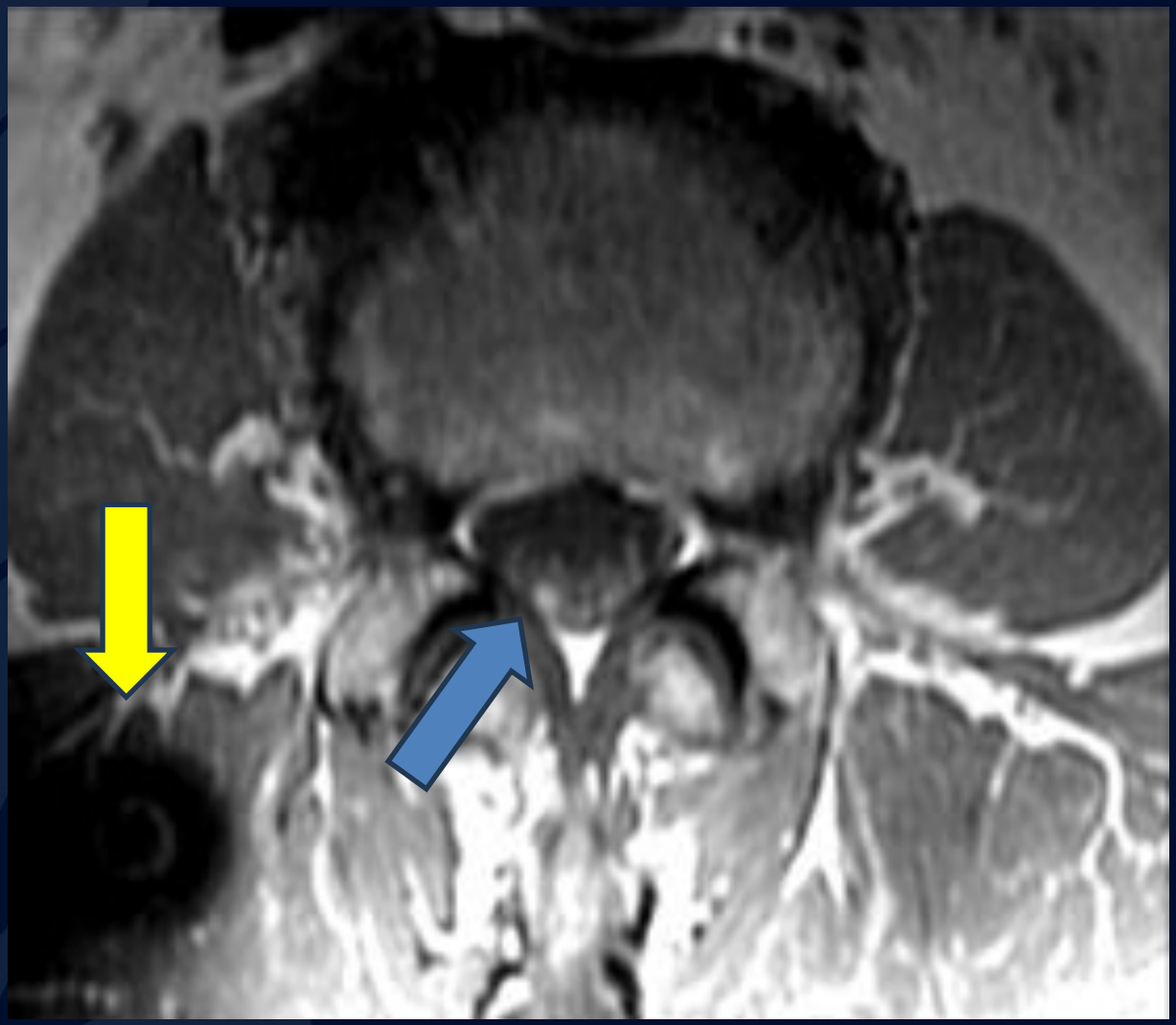
UCONN HEALTH
RADIOLOGY

Spinal Leptomeningeal Metastasis

UCONN HEALTH
RADIOLOGY

Enhancing nodule is seen within the cauda equina (arrow)

UCONN HEALTH
RADIOLOGY



Enhancing nodule is seen within the cauda equina (blue arrow). Unrelated susceptibility artifact (yellow arrow)

UCONN HEALTH
RADIOLOGY

Leptomeningeal Metastasis

- Leptomeningeal metastasis (LM), also called neoplastic meningitis, is characterized by dissemination of tumor cells within the leptomeninges and subarachnoid space.

- It may be described by the primary tumor type as carcinomatosis, gliomatosis, or lymphomatosis.

Epidemiology of Spinal LM

- Around 10% of patients with metastatic cancer will develop LM during the course of the disease.
- Demographics: more prevalent in older patients due to higher cancer incidence with age.
  - LM rates don't differ based on race or gender.
- Mortality:
  - No therapy: median survival is 4-6 weeks
  - Therapy: median survival is 2-6 months
    - depends on predisposing cancer

Spinal LM Predisposing Cancers

- Solid tumors: breast cancer, lung cancer, gastro-intestinal cancer, and melanoma.
- Hematologic cancers: non-Hodgkin's lymphoma (NHL), acute lymphoblastic leukemia (ALL), and multiple myeloma.
- Primary CNS cancers: medulloblastoma, glioblastoma, ependymoma, pineoblastoma, primitive neuroectodermal tumor (PNET) or primary CNS lymphoma.

Spinal LM Signs and Symptoms

- Presentation:
  - Headache (positional; raised ICP)
  - Radicular pain (neck, back, extremities)
  - Diplopia/visual disturbance (CN II, III, IV, & VI)
  - Gait instability
  - Mental status change (confusion, lethargy)
  - Urinary retention or incontinence
    - (cauda equina syndrome)
  - Facial numbness or hearing loss (CN V, VIII)

Spinal LM vs. Schwannoma

How to differentiate:

- Is CSF cytology malignant?
  - No → Schwannoma
  - Yes → LM
- How do the lesions grow over time?
  - Slow growth, little change → Schwannoma
  - Rapid growth, multifocal within weeks → LM
- MRI Presentation:
  - Generally rounded, oval → Schwannoma
  - Nodular or linear along CSF paths → LM
- Biopsy: gold standard for diagnosis

UCONN HEALTH
RADIOLOGY

References

- Birzu C, Tran S, Bielle F, et al. Leptomeningeal spread in glioblastoma: diagnostic and therapeutic challenges. *Oncologist*. 2020;25(11):e1763-e1776. doi:10.1634/theoncologist.2020-0258
- Jalali S, Renduchintala K, Afiat TP, Pabbathi S. Schwannomas mimicking leptomeningeal spread in the setting of breast cancer: a case report. *In Vivo*. 2023;37(6):2835-2839. doi:10.21873/invivo.13398
- Le Rhun E, Weller M, Brandsma D, et al. EANO–ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up of patients with leptomeningeal metastasis from solid tumours. *Ann Oncol*. 2017;28(Suppl 4):iv84-iv99. doi:10.1093/annonc/mdx221
- Nayar G, Ejikeme T, Chongsathidkiet P, et al. Leptomeningeal disease: current diagnostic and therapeutic strategies. *Oncotarget*. 2017;8(42):73312-73328. doi:10.18632/oncotarget.20272

- Citation: Lazurenko B, Wolansky L. Spinal leptomeningeal metastasis. *Radiology Online*. 2025.

UCONN HEALTH
RADIOLOGY