



A Sticky Situation

Identifying Froin's Syndrome as a sign of spinal cord neoplasm

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Learning Objectives:

- Identify Froin's syndrome
- Recognize the causes of Froin's syndrome
- Understand the relationship of this syndrome to central nervous system neoplasia

Patient Presentation:

A 64 year-old man with atrial fibrillation on warfarin presented with one week of progressive bilateral lower extremity weakness and inability to void. Past history included pacemaker placement.

Review of systems was notable for easy bruisability.

Physical Exam:

T 37°C, BP 206/100, HR 67

Paraplegia with bilateral lower extremity hypertonia and decreased sensation to the T12 level. He had bilateral hallux dorsiflexion on plantar reflex testing.

Laboratory Testing:

INR: 22

CBC: 8>12.9/36.1<189

Clinical Reasoning:

Spontaneous spinal hematoma was highest on our differential. Also included was inflammatory spinal cord pathology. Unfortunately, our patient's pacemaker and coagulopathy precluded spinal MRI, CT myelography and lumbar puncture. A non-contrasted CT spine revealed only degenerative disk disease.

Hospital Course:

Given high suspicion for a mass lesion, his anti-coagulation was reversed and lumbar puncture and CT myelogram were performed. The spinal fluid was viscous and coagulated in the tube (Figure 1). Myelogram revealed a large, intradural, extramedullary mass at T11-T12 compressing the spinal cord (Figure 2).

Patient underwent emergent neurosurgical intervention with resection of tumor and evacuation of hematoma. Pathology revealed Schwannoma. No further chemotherapy or radiation was required.



Figure 1 – Coagulated CSF

Cerebrospinal fluid (CSF) results:

- Xanthochromic, viscous consistency that **coagulated in tube** (Figure 1)
- Protein >1500 mg/dL.
- Number of Cells: 57 (<1% nucleated)
- Glucose: 45

Discussion:

The combination of elevated protein, xanthochromia, and coagulation of CSF is pathognomonic for Froin's syndrome

Froin's syndrome can occur with blockage of CSF flow by a spinal cord mass, causing stagnation of proteinaceous CSF and activation of coagulation factors. This leads to a viscous consistency.

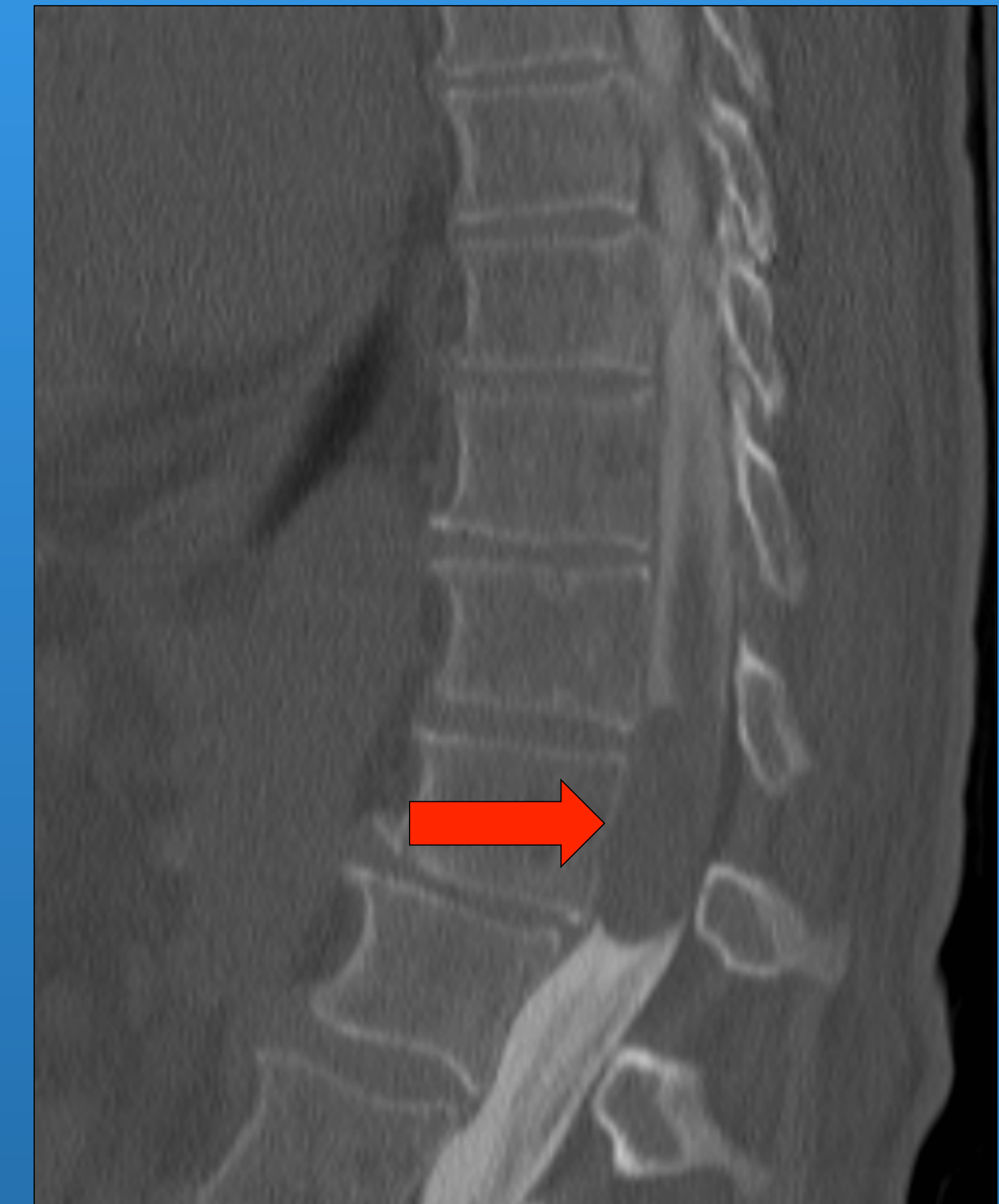


Figure 2 - CT Myelogram with intradural mass

Conclusions:

- Froin's syndrome can occur with a neoplasm obstructing CSF flow, spinal epidural abscess, or other CNS infection
- Early recognition of Froin's syndrome can lead to diagnosis of a neurosurgical emergency.

References:

Soon-Kul Kwon and Kim, Mi-Woon, "Pseudo-Froin's syndrome, xanthochromia with high protein level of cerebrospinal fluid" Korean Journal of Anesthesiology, December 30 2014