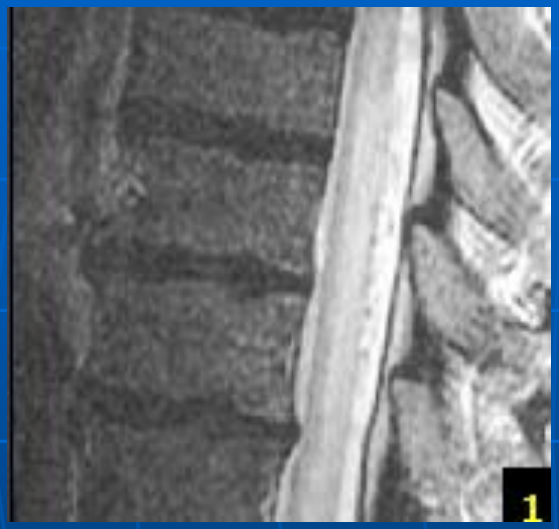
Spinal Cord Infarction

- Spinal cord ischemia
- Cord infarction 2° to vessel occlusion (radicular artery)
- Anterior spinal artery syndrome (most common)
- Posterior spinal artery syndrome
  - Usually unilateral (due to paired posterior spinal arteries)
- Etiology
  - Up to 50% of cases have no known etiology
  - Majority of known causes relate to aortic pathology
  - Septicemia; systemic hypotension
  - Blunt trauma with dissection
  - Fibrocartilaginous embolism
  - Iatrogenic; transforaminal steroid injection, selective root block

Clinical

- Abrupt onset weakness, loss of sensation
- Rapid progression; maximum deficit within hours
- Poor prognosis, with permanent disabling sequelae
- Pain is frequent and disabling feature of cord infarct

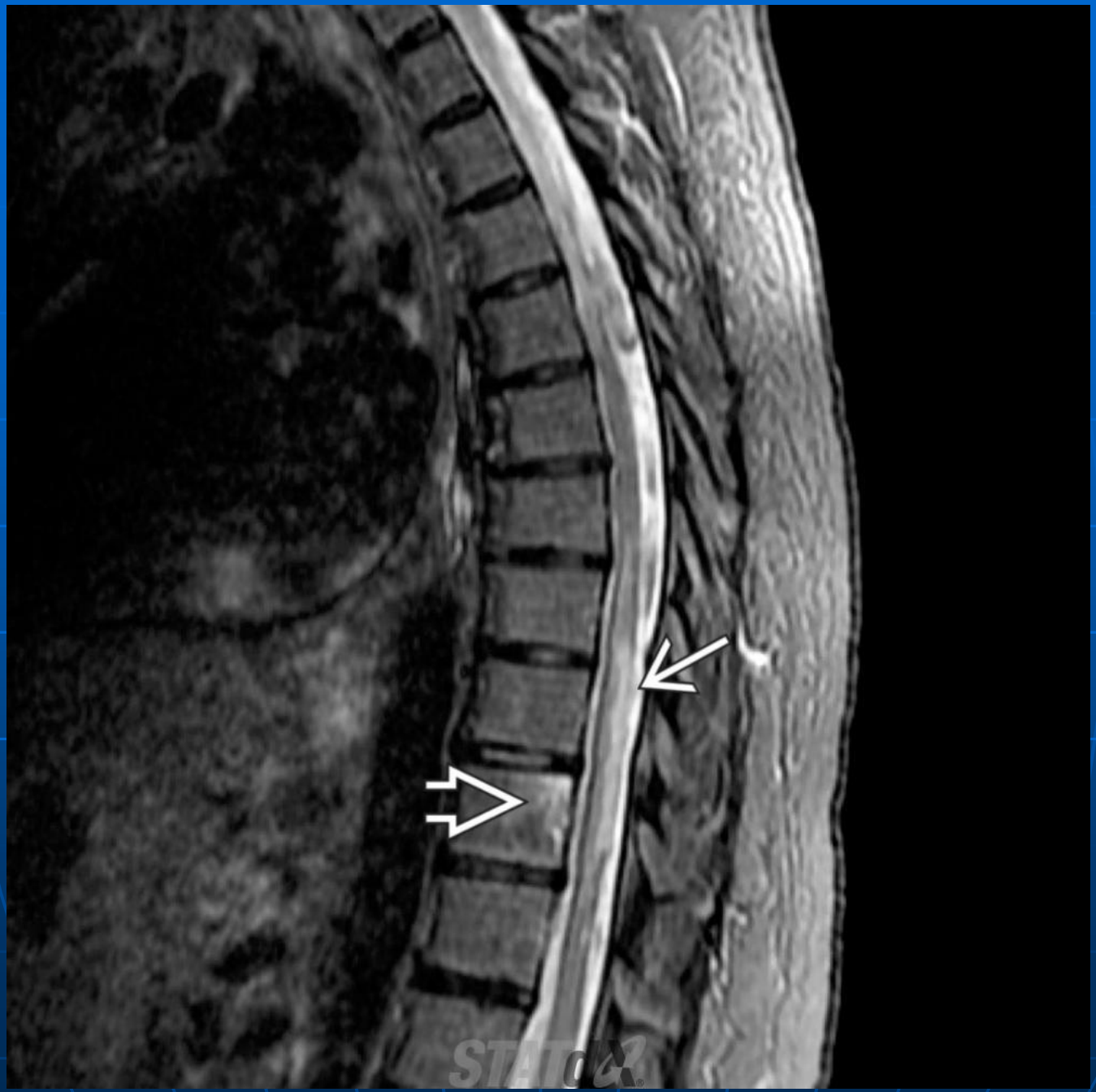
Spinal Cord Infarction



- **Imaging Findings**
  - Best diagnostic clue: Focal T2 hyperintensity involving the anterior horn cells in slightly expanded cord
  - Location: Most frequent in the upper thoracic cord because of arterial border zone
  - Axial 2D T2 GRE best for looking at cord signal
  - Also do 3D T2 FSE at Emory

Axial T2WI MR in this case of hypoxic-ischemic encephalopathy (HIE) shows typical "owl's eye" abnormal hyperintensity within the central gray matter from chronic spinal cord infarction.

Acute spinal cord ischemia syndrome



Sagittal STIR MR shows the cord hyperintensity involving the mid and dorsal aspect of the thoracic cord (white solid arrow), along with the vertebral body infarction (white open arrow). The classic anterior 2/3 of the cord involved is not always present.

DDx:

- Multiple sclerosis
- Transverse myelitis
- ADEM/viral myelitis
- Neuromyelitis optica
- Type I dural fistula
- Spinal cord neoplasm
- Radiation myelopathy

Anatomy

- Anterior spinal artery branches supply GM, adjacent WM mantle
  - Arises at junction of intradural segment of vertebral arteries and lies in midline of cord on ventral surface
  - Courses inferiorly to filum terminale
- Posterior branches supply 1/3 cord periphery
  - Arise from PICA or vertebral arteries
  - Paired longitudinal channels on dorsal cord
  - Numerous anastomoses
- Thoracolumbar region derives supply from major radiculomedullary artery (great radicular artery or artery of Adamkiewicz)
  - Usually arises on left, from T9-T12 in 75%
  - Has characteristic "hairpin" turn on MRA, DSA