Spinal Vascular Lesions

- Spinal cord infarction
- Hemangioblastoma
- Cavernous malformation
- Vascular malformations (Type 1-4)
- Spinal artery aneurysm

Spinal Cord Arterial Supply

- Anterior spinal artery
- Posterior spinal arteries

Spinal Cord Infarction

- Abrupt onset pain, weakness, loss of sensation
- Distal ½ thoracic cord often affected (arterial border zone), commonly due to aortic pathology
- Cervical cord: vertebral artery injury, thrombus
Spinal Cord Infarction

- Acute: T2 hyperintense, mild expansion, DTI positive, central grey matter
- Chronic: central myelomalacia with "owl's eye" appearance
Spinal Cord Infarction:

Transverse myelitis
Viral myelitis/ADEM
Multiple sclerosis
Neuromyelitis optica
Type 1 dural AVF

Ddx: Transverse Myelitis

Ddx: Multiple Sclerosis

Ddx: Neuromyelitis Optica
Hemangioblastoma

- Subpial, posterior cord, enhancing nodule, syrinx/edema, flow voids in larger lesions (>2.5 cm)
- Approx. 2/3 sporadic, 1/3 VHL

Hemangioblastoma: Ddx

- Arteriovenous malformation
- Cavernous malformation
- Intramedullary neoplasm: ependymoma, astrocytoma, metastases

Cavernous Malformation

- Low-flow lesions, dysplastic capillaries forming cavernous sinusoids
- Lobulated mulberry appearance
- Blood products of different ages
- “Bloom” on GRE
- Edema if recent hemorrhage
Cavernous Malformation

AX T2
AX GRE

Cavernous Malformation: Ddx

- Intramedullary neoplasm: ependymoma, astrocytoma, hemangioblastoma, metastases
- Arteriovenous malformation

Spinal Cord Vascular Malformations

- Type 1: Spinal dural AVF
- Type 2: Glomus AVM
- Type 3: Juvenile AVM
- Type 4: Pial AVF

Spinal Cord Vascular Malformations

- Spinal dural fistulas: Type 1
- Intradural pathology: Types 2-4

Type 1: Spinal Dural AV fistula

- Direct communication radiculomeningeal artery to radicular vein
- Most common spinal vascular malformation (70%)
- Acquired: 40% post-traumatic, 60% spontaneous
- 85% single arterial feeder

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**Spinal DSA**

Bilateral arterial injections:
- Intercostal
- Lumbar
- Median and lateral sacral
- Vertebral
- Ascending cervical
- If no fistula found, also:
  - Ascending pharyngeal
  - Mengohypophyseal trunk
  - Middle meningeal
  - Occipital

**Type 1: Spinal Dural AVF**

Axial CTA, Coronal CTA, and DSA images are shown. The images illustrate the presence of a dural arteriovenous fistula (DAVF) in the spinal region.


MRA images are also depicted, showing the vascular anatomy in the presence of the fistula.

Type 1: Spinal Dural AV fistula

Type 2: Glomus AVM

- Compact intramedullary nidus, multiple ASA +/- PSA feeders
- 2nd most common (20%)
- Cervicothoracic
- Younger patients, acute deterioration, hemorrhage

Type 2: Glomus AVM

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Type 2: Glomus AVM

- Extensive with multiple feeders, intra and extramedullary components
- Metameric
- Children, young adults

Type 3: Juvenile AVM

- Extensive with multiple feeders, intra and extramedullary components
- Metameric
- Children, young adults

Type 4: Pial AVF

- Intradural perimedullary AVF with direct communication between spinal artery and vein
- 3rd to 6th decade

Type 4: Pial AVF

Spinal Artery Aneurysm
- Rare cause of spinal SAH
- Usually fusiform and small (<3mm)
- Can be associated with vasculitis and noninflammatory vasculopathies
- Can spontaneously regress
Spinal Vascular Lesions: Summary

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Thank you