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No disclosures
Spinal cord ischemia

Non-invasive imaging of spinal cord blood supply

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Detection and Protection

Non-invasive imaging of spinal cord blood supply

Robbert J. Nijenhuis
electrical stimulation
500 V; ~1.2 A, 5 serial stimuli

- pyramidal cell in motor cortex
- peripheral nerve
- pyramidal tract
- alpha motor neuron in anterior horn of spinal cord

**MEP response**
- abd. poll. brevis muscle
- tibialis anterior muscle
In post-dissection TAAA (almost) all intercostal and lumbar arteries are patent

The AKA receives direct segmental artery blood supply in 86% of patients

Less collateral pathways
In degenerative TAAA the majority of intercostal and lumbar arteries are occluded.

The AKA receives direct segmental artery blood supply in only 46% of patients.

Collateral network
Direct SA connection
Indirect SA connection via collateral pathway
MEP monitoring during open TAAA (800 procedures)

- 0 false positive
- 0 false negative
- 100% correlation
- Paraplegia < 4%
Current protocol

- CSF drainage
- BP management
- Preserve LSA and HA perfusion

- Staging by only TEVAR first (type II TAAA)
- B/FEVAR:
  - Spinal cord function monitoring (MEP)
  - Last branch: 15 min balloon occlusion
  - Decision to leave branch open
    - MEP >50%
    - Endoleak on angiography
    - Aneurysms Sac Pressure

Can we identify patients at risk?
Results EndoTAAA

- 103 patients
- m/v : 74 /29
- age: 72 (59-83) jaar
- diameter aneurysma: 70 (59-83) mm
Results EndoTAAA

- 30-day/ in-hospital mortality: 10%
  - 91% 2014 and earlier

- Spinal cord ischemia:
  - 6% delayed paraparesis
  - 2% delayed paraplegia
  - 4% improved (all walking)
  - 1% cured
  - 1% no improvement

1.2% complete persistent paraplegia
Conclusions

- Neuromonitoring by means of motor evoked potentials is 100% reliable in detection of spinal cord ischemia
- It serves as a “navigation” system during open and endovascular management of TAAA repair
- It contributes to significantly reduction of paraplegia rates.
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