Protocol for Imaging Blunt Cervical Injuries

Most injuries result from stretching of the vessels as a consequence of hyperextension of the neck (arterial stretching leads to endothelial tearing with subsequent intimae flaps, dissections, or emboli) Motor vehicle collision is the most common mechanism.

Most patients are asymptomatic prior to diagnosis and remain asymptomatic after diagnosis; the reported incidences are likely to depend on the screening criteria used.

Performing four-vessel cervical angiography on all blunt trauma patients would identify nearly all cervical arterial injuries, but the logistical considerations, expense and potential risks associated with this approach make it unfeasible.

Criteria for imaging (adult and paediatrics)

Uncommon Criteria
- Arterial bleeding from the ears, nose, mouth (level 2 evidence)
- Expanding cervical haematoma
- Cervical bruit in a patient younger than 50 years
- Evidence of cerebral infarction on CT scanning
- Horner syndrome
- Basilar skull fracture involving the petrous bone (level 3)
- Foramen transversum (level 3)

Other Published Screening criteria
- Neurologic symptoms not explained by CT findings (level 2)
- GCS <9 (level 3)
- Mechanism consistent with cervical hyperextension, hyperrotation, or Hyperflexion
- Displaced facial fracture or complex mandible Le forte II and Le forte III (level 3)
- Diffuse axonal injury of the brain (level 3)
- Near hanging
- Seat-belt abrasion or other soft tissue to the anterior neck
- Cervical vertebral # or distraction injury (isolated spinous process # excluded)

Imaging Required
- Four vessel angiography was the gold standard (level 2)
- Duplex US not sensitive enough (level 2)
- MRI lacks the sensitivity needed (may miss lesions pseudoaneurysm)
- Multislice CTA (>8) – non-invasive and rapid, logistically not demanding should be considered as screening modality in place of FVCA (level 3)

Follow up imaging (angio or duplex) should be performed 7 to 10 days after diagnosis

Grade – scale for blunt cervical arterial injury based on arteriography
- Grade I lesions less than 25% luminal narrowing
- Grade II lesions greater than 25% luminal narrowing
- Grade III lesions are pseudoaneurysms
- Grade IV lesions demonstrate thrombosis
- Grade V lesions are transections with extravasation
Management

- Blunt vertebral artery injuries are treated non-operatively
- Transcatheter embolization should be considered and small lesions can be treated with anticoagulation
- Heparin IV: aPTT on an arbitrary range of 50 to 60 seconds
- Aspirin if contraindications to heparin (intracranial lesion at risk for haemorrhage)
- Duration of treatment unknown (3-6 months adequate, may be discontinued earlier, if repeat imaging shows a resolved injury
- In patients in whom anticoagulant therapy is chosen conversion to warfarin titrated to aPT INR of 2-3 for 3-6 months is recommended

References