

TRAUMATIC DISSECTION OF THE INTERNAL CAROTID ARTERY AFTER BLUNT CERVICAL TRAUMA AND DISCUSSION OF MANAGEMENT OF THE SAME

Austin McCrea, DO, MS¹; Valentino Piacentino MD, PhD²; Saptarshi Biswas MD³

1: General Surgery Resident, GSMC; 2: Vascular and General Surgery GSMC; 3: Acute Care and Trauma Surgery GSMC.

Background

- When unrecognized and untreated, blunt cerebrovascular injuries can lead to significant morbidity, stroke and even death.
- Recent studies suggest that blunt cerebrovascular injury have a prevalence in the trauma population of 1-1.6% with some resources estimated 2.7% which are associated higher injury severity scores.

Case Presentation

- 56-year-old male who presented to the trauma center at a local regional level 1 trauma center after a helmeted motorcycle collision causing significant flexion and extension injury of the cervical spine with C6 transverse process fracture, 1st rib fracture, and right radial orthopedic injury.
- Also found to have an incidental high grade 90% stenosis of the right internal carotid artery with a focal high-grade dissection of the left internal carotid artery without focal neurological deficit and no prior history of stroke or transient ischemic attack.
- Therapeutic anticoagulation began with a heparin drip.
- A CT angiogram 48 hours later demonstrated a continued injury of the left internal carotid artery and focal stenosis of the right carotid artery.
- The patient was started on dual anti-platelet therapy and sent home for repeat CTA angiogram in 3 weeks
- The patient had a syncopal episode the following day and a diagnostic cerebral angiogram demonstrated continued stenosis of the right ICA up to 90% stenosis with a distal left ICA stenosis and focal dissection.
- Patient then underwent a right carotid endarterectomy to manage his right ICA stenosis with a plan to study the left interval carotid injury at a later time to check for resolution of the traumatic dissection.

Pictures

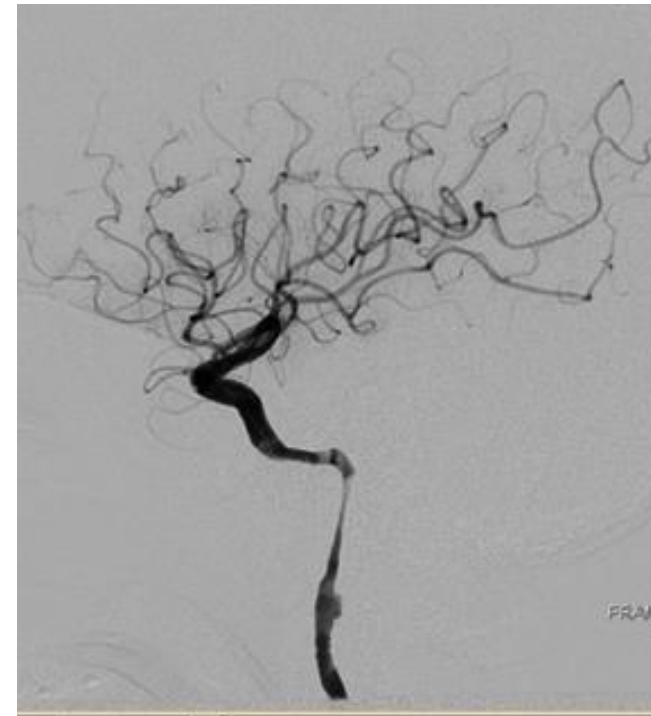


Figure 1 :Cerebral Angiogram of Left ICA



Figure 2: Index CTA demonstrating right carotid stenosis



Figure 3 : Follow up 48hrs later CTA demonstrating right carotid stenosis

Discussion

- The management of this case is unique as the patient had a focal left carotid injury from blunt cervical vascular trauma with a baseline contralateral critical carotid stenosis.
- The patient was not a candidate for carotid stenting at the time of injury but tolerated anticoagulation and then was transitioned to anti-platelet therapy until discharge.
- A CT angiogram is typically performed to evaluate resolution or propagation of a vertebral artery intimal injury; however, because this patient had concomitant contralateral stenosis of the carotid artery, this forced the surgeon to place the patient on anticoagulation and go to the operating room for fear of the complications of bilateral critical carotid stenosis.

Conclusion

- Screening for blunt cerebrovascular injury is warranted in cases of arterial hemorrhage from the head neck, expanding cervical hematoma, cervical bruits in patients under 50 years of age and other focal neurological deficits inconsistent with imaging findings.
- Treating Denver criteria grade 1-4 blunt cerebrovascular injuries with an anti-thrombotic agent is currently the standard of care and follow up CT angiography is used to guide duration of treatment.

References

- [1] Rutman, A. M., Vranic, J. E., & Mossa-Basha, M. (2018). Imaging and management of Blunt Cerebrovascular Injury. *RadioGraphics*, 38(2), 542–563. <https://doi.org/10.1148/rg.2018170140>
- [2] Wang, G., Li, C., Piao, J., Xu, B., & Yu, J. (2021). Endovascular treatment of blunt injury of the extracranial internal carotid artery: the prospect and dilemma. *International journal of medical sciences*, 18(4), 944–952. <https://doi.org/10.7150/ijms.50275>