CT angiography for evaluation of vertebral artery injury in cervical spine trauma: The University of Florida experience

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Introduction

Cervical spine trauma is a risk factor for vertebral artery (VA) injury and trauma patterns at greatest risk for VA injury remain unclear. The reported risk for stroke after VA injury can be as high as 20%. Since becoming a Level 1 Trauma Center in 2005, a significant number of cervical spine fractures have been treated at UF and screening for VA injury and has been highly physician dependent.

We evaluated all CT angiograms (CTAs) done for VA injury in cervical spine trauma patients, the yield of these CTAs, fracture patterns that were more likely to result in VA injury, and outcomes from VA injury.

Methods

The records of all trauma patients from 1/1/2005 to 3/31/2011 with a cervical spine fracture were evaluated to determine who underwent CTA for VA injury. These records were then examined to determine who suffered VA injury, and any treatment or sequelae from the injury. In addition, fracture patterns were evaluated to determine those more likely to result in VA injury.

Results

1091 patients with c-spine trauma were evaluated. 277 underwent CTAs to evaluate for VA injury. 59 of 277 (21%) had VA injury, of which 18 were treated with antiplatelet agent only (10) or anticoagulation (8). 7 patients died from injuries not related to VA injury. Of 52 survivors, none had neurological sequelae from VA injury. Mean follow-up was 210 days with a range from 6 days to 1170 days.

C2 fractures, fracture dislocations, and C3-6 fractures with comminuted fractures of the transverse foramen were statistically significantly more likely to be associated with VA injury.

Results

Results

Finding	Number	Percentage
Cervical spine injury patients	1091	
Patients who underwent CTA neck	331	
CTA performed for other indications	54	
CTA performed to evaluate vertebral artery	277	
Sex of Patients with CTA	M=168,F=109	
Average Age of Patients with CTA	43.5(12-94)	
Vertebral artery injury	59/277	21%
Sex of Patients with Injury	M=40,F=19	
Sex of Patients without Injury	M=128,F=90	

Summary statistics

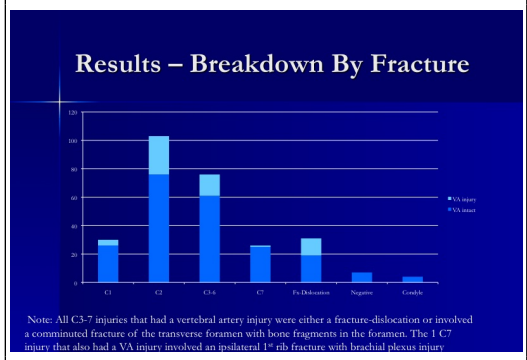
Results

Results

Finding	Number	Percentage
Average Age of Patients with Injury	44.1(20-85)	
Average Age of Patients without Injury	43.3(12-94)	
Occluded injury	27/59	46%
Treated	18/59	31%
Treated with antiplatelet only	10/18	56%
Treated with anticoagulation	8/18	44%
Died from trauma during hospitalization	7	
Neurological sequelae from vertebral artery injury in survivors	0/52	0%
Average length of follow-up in days	210(6-1170)	

Patients with injury and treatment received

Results



VA injury by fracture level

Conclusions

We recommend the following spine fractures be screened for VA injury: Fracture-dislocation, C1 fracture, C2 fracture, C3-6 fracture with comminuted fracture of transverse foramen. This accounts for all VA injuries from cervical spine trauma found in our study.

Learning Objectives

1.) determine the outcomes of vertebral artery injury from cervical spine trauma
2.) determine who needs screening for vertebral artery injury after trauma

References

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