Survey: Extracranial Asymptomatic Vertebral Artery Injury

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The following 31 questions takes approximately 10 minutes to complete.

1. Please Complete The Following:

Hospital, Clinic, or University Affiliation

City

2. Please select your specialty

- [ ] Neurosurgery
- [ ] Orthopedics
- [ ] Intensivist
- [ ] Interventional Radiology
- [ ] Neurology
- [ ] Other (please specify)

3. Years in Practice

- [ ] 0-5
- [ ] 6-10
- [ ] 11-15
- [ ] 16-20
- [ ] >20
- [ ] Fellow

4. What do you consider to be the top 3 CLINICAL signs of traumatic vertebral artery injury. Please rank from 1 to 3, in order of perceived predictive value.

#1

#2

#3

5. What do you consider to be the top 3 RADIOGRAPHIC signs of traumatic vertebral artery injury. Please rank from 1 to 3, in order of perceived predictive value.

#1

#2

#3

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This is the first of two cases.

CASE #1:

A 35 year old male presents after a fall from standing height. He is neurologically intact and has no other injuries. Imaging shows a lateral mass fracture extending into the vertebral foramen (i.e. foramen transversarium) on unenhanced CT.

Please answer the following questions pertaining to this case.

6. CASE#1:

Would you perform additional SCREENING for traumatic vertebral artery injury?

- ○ I would not perform additional screening for this specific patient
- ○ Yes, with CTA
- ○ Yes, with MRA
- ○ Yes, with Angiography
- ○ Other (please specify)

7. CASE #1:

If you answered YES to the previous question regarding SCREENING for this specific patient, when would you employ the SCREENING investigation? Select more than one if applicable.

- ☐ Immediately
- ☐ Within 7 days
- ☐ Between 7 days to 3 months
- ☐ Only if symptoms develop (symptoms that could reasonably be attributed to vertebral artery injury)
- ☐ Not applicable
- ☐ Other (please specify)

CASE #1 CONTINUED:

For the remainder of the case, please assume a CTA is positive for traumatic vertebral artery injury.

Please answer the following questions:

8. CASE #1:

CTA shows a dissection with <25% lumen diameter reduction, without an intimal flap. Anatomy is conventional and the dissection is non-progressive. Please select your TREATMENT strategy. Select more than one if applicable.

- [ ] None
- [ ] ASA
- [ ] Heparin
- [ ] Plavix
- [ ] Warfarin
- [ ] Direct Thrombin Inhibitor
- [ ] Direct Factor Xa Inhibitor (e.g. Rivaroxaban)
- [ ] Endovascular Therapy
- [ ] Open Surgery
- [ ] Other (please specify)

9. CASE #1:

CTA shows a dissection (raised intimal flap) with >25% luminal diameter reduction. Anatomy is conventional and the dissection is non-progressive. Please select your TREATMENT strategy. Select more than one if applicable.

- [ ] None
- [ ] ASA
- [ ] Heparin
- [ ] Plavix
- [ ] Warfarin
- [ ] Direct Thrombin Inhibitor
- [ ] Direct Factor Xa Inhibitor (e.g. Rivaroxaban)
- [ ] Endovascular Therapy
- [ ] Open Surgery
- [ ] Other (please specify)

10. CASE #1:

If you selected a medical therapy (e.g. anti-coagulant or anti-platelet) option above, what is your overall DURATION OF TREATMENT?

- ◯ Not applicable
- ◯ 1-7 days
- ◯ 1-4 weeks
- ◯ 1-3 months
- ◯ 3-6 months
- ◯ >6 months
- ◯ Other (please specify)

11. CASE #1:

For the asymptomatic patient with <25% luminal diameter reduction, if you previously selected endovascular or surgical therapy, how long do you wait before starting this therapy?

- ◯ Not applicable
- ◯ Immediately
- ◯ 1-7 days
- ◯ 1-4 weeks
- ◯ 1-3 months
- ◯ 3-6 months
- ◯ >6 months
- ◯ Other (please specify)

12. CASE #1:

For the asymptomatic patient with <25% luminal diameter reduction, how often do you FOLLOW-UP *clinically*?

- ◯ Not applicable
- ◯ q1-7 days
- ◯ q1-4 weeks
- ◯ q1-3 months
- ◯ q3-6 months
- ◯ q>6 months
- ◯ Other (please specify)

13. CASE #1:

For the asymptomatic patient with <25% luminal diameter reduction, how often do you FOLLOW-UP *radiographically*?

- ◯ Not applicable
- ◯ q1-7 days
- ◯ q1-4 weeks
- ◯ q1-3 months
- ◯ q3-6 months
- ◯ q>6 months
- ◯ Other (please specify)

14. CASE #1:

For the asymptomatic patient with a raised intimal flap and >25% luminal diameter reduction, if you selected endovascular or surgical therapy, how long do you wait before starting this therapy?

- ◯ Not applicable
- ◯ Immediately
- ◯ 1-7 days
- ◯ 1-4 weeks
- ◯ 1-3 months
- ◯ 3-6 months
- ◯ >6 months
- ◯ Other (please specify)

15. CASE #1:

For the asymptomatic patient with a raised intimal flap and >25% luminal diameter reduction, how often do you FOLLOW-UP *clinically*?

- ◯ Not applicable
- ◯ q1-7 days
- ◯ q1-4 weeks
- ◯ q1-3 months
- ◯ q3-6 months
- ◯ q>6 months
- ◯ Other (please specify)

16. CASE #1:

For the asymptomatic patient with a raised intimal flap and >25% luminal diameter reduction, how often do you FOLLOW-UP *radiographically*?

- Not applicable
- q1-7 days
- q1-4 weeks
- q1-3 months
- q3-6 months
- q>6 months
- Other (please specify)

17. CASE #1:

The patient in CASE #1 has done well and there are no signs of progression of the dissection. Please select an OVERALL length of CLINICAL and RADIOGRAPHIC follow-up. If these differ, please specify.

- 0-4 weeks
- 1-2 months
- 3-6 months
- 7-12 months
- 1-3 years
- >3 years
- Discontinue when dissection shows complete regression, regardless of length of time
- Other (please specify)

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This is the last case. There is one more page after this.

CASE #2:

A 55 year old female presents after a high speed motor vehicle collision. There was no loss of consciousness. She is neurologically intact and has no apparent injuries.

Imaging shows an atypical hangman's fracture (unilateral oblique C2 body fracture with contralateral pars fracture) on unenhanced CT. She has conventional anatomy.

Please answer the remaining questions which pertain to this case.

18. CASE#2:

Would you perform additional SCREENING for traumatic vertebral artery injury?

- ◯ I would not perform additional screening for this specific patient
- ◯ Yes, with CTA
- ◯ Yes, with MRA
- ◯ Yes, with Angiography
- ◯ Other (please specify)

19. CASE #2:

If you answered YES to the previous question regarding SCREENING for this specific patient, when would you employ the SCREENING investigation? Select more than one if applicable.

- ☐ Immediately
- ☐ Within 7 days
- ☐ Between 7 days to 3 months
- ☐ Only if symptoms develop (symptoms that could reasonably be attributed to vertebral artery injury)
- ☐ Not applicable
- ☐ Other (please specify)

CASE #2 CONTINUED:

For the remainder of the case, please assume a CTA is positive for traumatic vertebral artery injury.

Please answer the following questions:

20. CASE #2:

CTA shows a pseudoaneurysm dissection. Please select your TREATMENT strategy. Select more than one if applicable.

- [ ] None
- [ ] ASA
- [ ] Heparin
- [ ] Plavix
- [ ] Warfarin
- [ ] Direct Thrombin Inhibitor
- [ ] Direct Factor Xa Inhibitor (e.g. Rivaroxaban)
- [ ] Endovascular Therapy
- [ ] Open Surgery
- [ ] Other (please specify)

21. CASE #2:

If you selected a medical therapy (e.g. anti-coagulant or anti-platelet) option for this patient with a pseudoaneurysm dissection, what is your overall DURATION OF TREATMENT?

- ( ) Not applicable
- ( ) 1-7 days
- ( ) 1-4 weeks
- ( ) 1-3 months
- ( ) 3-6 months
- ( ) >6 months
- ( ) Other (please specify)

22. CASE #2:

For the asymptomatic patient with a pseudoaneurysm dissection, if you selected endovascular or surgical therapy, how long do you wait before starting this therapy?

- Not applicable
- Immediately
- 1-7 days
- 1-4 weeks
- 1-3 months
- 3-6 months
- >6 months
- Other (please specify)

23. CASE #2:

For the asymptomatic patient with a pseudoaneurysm dissection, how often do you FOLLOW-UP clinically?

- Not applicable
- q1-7 days
- q1-4 weeks
- q1-3 months
- q3-6 months
- q>6 months
- Other (please specify)

24. CASE #2:

For the asymptomatic patient with a pseudoaneurysm dissection, how often do you FOLLOW-UP radiographically?

- ◯ Not applicable
- ◯ q1-7 days
- ◯ q1-4 weeks
- ◯ q1-3 months
- ◯ q3-6 months
- ◯ q>6 months
- ◯ Other (please specify)

25. CASE #2:

The patient in CASE #2 has done well and there are no signs of progression of the dissection. Please select an OVERALL length of CLINICAL and RADIOGRAPHIC follow-up.

If these differ, please specify.

- ◯ 0-4 weeks
- ◯ 1-2 months
- ◯ 3-6 months
- ◯ 7-12 months
- ◯ 1-3 years
- ◯ >3 years
- ◯ Discontinue when dissection shows complete regression, regardless of length of time
- ◯ Other (please specify)

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Final page.

26. Please select one of the following regarding the use of a criterion-based screening tool for traumatic vertebral artery injury:

- [ ] I use the Memphis Criteria (or Modified Memphis Criteria)
- [ ] I use the Denver Criteria
- [ ] I do not use a criterion-based screening tool
- [ ] Other (please specify)

27. If you answered, "I do not use a criterion-based screening tool" in the previous question, please select a corresponding reason:

- ( ) Not applicable (I do use a criterion-based tool)
- ( ) Difficult to remember
- ( ) Low yield
- ( ) Time consuming
- ( ) Other (please specify)

28. I am confident in managing asymptomatic traumatic vertebral artery injury

- [ ] Strongly agree
- [ ] Agree
- [ ] Neither agree nor disagree
- [ ] Disagree
- [ ] Strongly disagree

29. My decision making regarding SCREENING for traumatic vertebral artery injury is evidenced-based, as opposed to expert opinion.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree

30. My decision making regarding TREATMENT for traumatic vertebral artery injury is evidenced-based, as opposed to expert opinion.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree

31. My decision making regarding FOLLOW-UP for traumatic vertebral artery injury is evidenced-based, as opposed to expert opinion.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree

32. Please provide any feedback here.