



Abnormalities of the vertebral artery subsequent to cervical spine degeneration and aging: evidence to avoid catastrophic VA injury or occlusion in cervical spine surgeries

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Disclosures



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Introduction & Background

Background: The morphologic changes in the vertebral artery (VA) subsequent to cervical spine degeneration and aging are not fully understood.

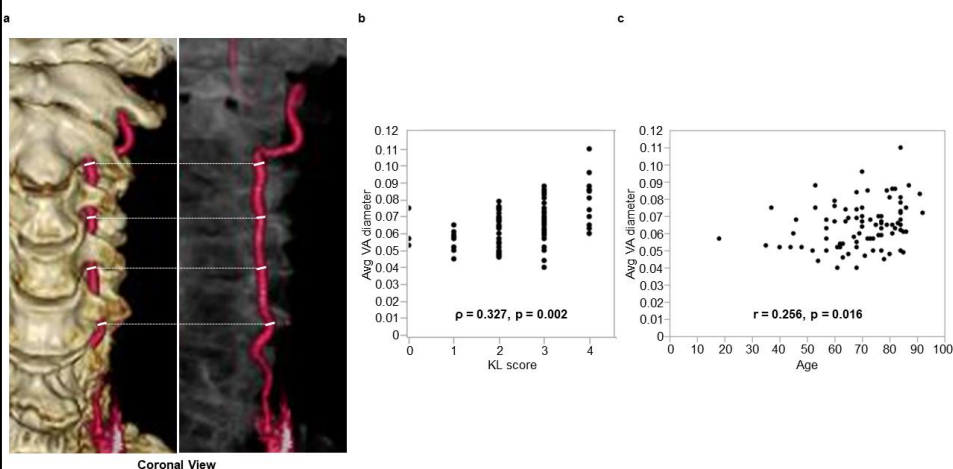
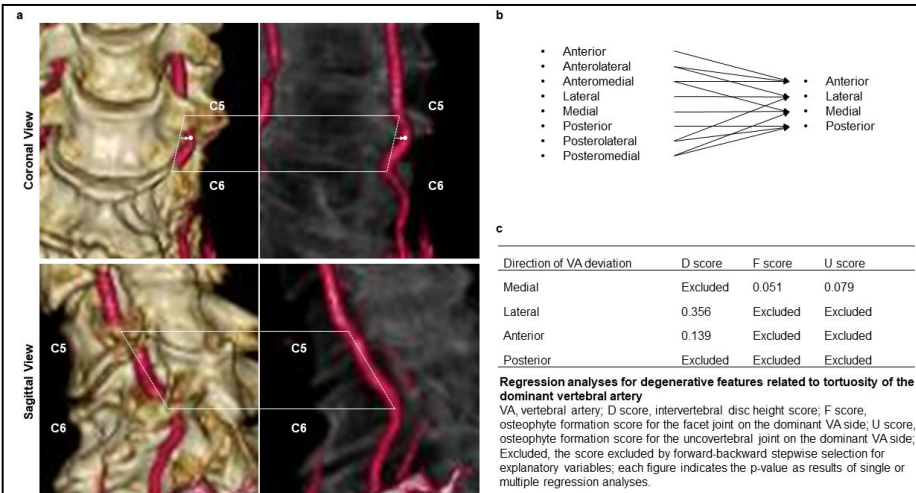
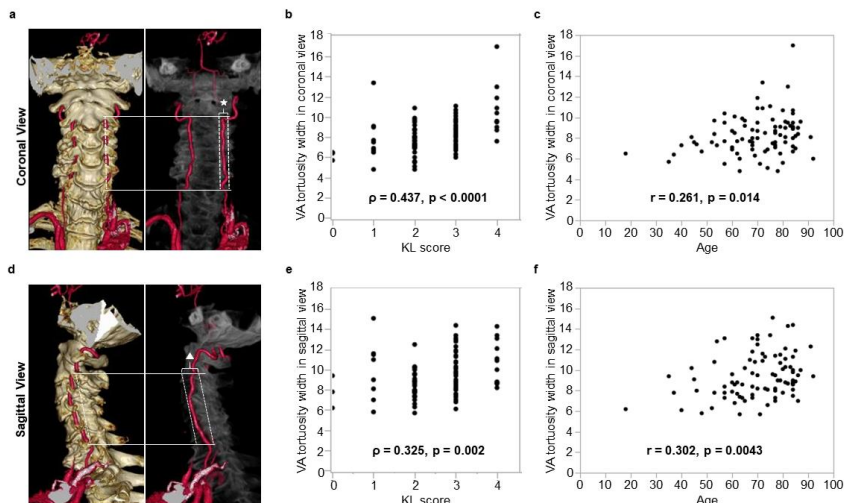
Research question: The morphologic changes in the VA should be clarified to avoid iatrogenic VA injury. Identifying the level with a high prevalence of VA stenosis is beneficial because mobility at the corresponding level possibly causes subsequent occlusion of the VA, which can be a reason for including the level in operative fusion.

Materials and Methods

Design: Retrospective cross-sectional study.

Methods: Eighty-eight consecutive patients were included. Correlations between the severity of VA tortuosity or diameter and the cervical spine degeneration score i.e. Kellgren and Lawrence (KL) score or age, degenerative features related to tortuosity of the VA, the level with a high prevalence of VA stenosis and its causal degenerative features were evaluated using X-ray, computed tomography (CT), and CT angiography images.

Results



	C2	C3	C3/4	C4	C4/5	C5	C5/6	C6	C6/7	total
UV j.	0	0	6(2)	0	6(3)	0	7(3)	0	7(3)	26(11)
Facetj.	0	0	5(2)	0	4(2)	0	0	0	0	9(4)
None	0	0	1(1)	2(1)	0	0	3(2)	0	1(1)	7(5)
TF stenosis	2	1*	0	0	0	0	0	1	0	4
VA calc.	0	0	0	0	0	1†	0	0	1	2
Ped. scl.	0	0	0	0	0	1(1)	0	0	0	1(1)
Intra-TF calc.	0	0	0	1	0	0	0	0	0	1
Total	2	1	12(5)	3(1)	10(5)	2(1)	10(5)	1	9(4)	50(21)

Spinal degenerative features that caused vertebral artery stenosis

The figures represent the number of each spinal degenerative feature. UV j., uncovertebral joint; Facetj., facet joint; TF, transverse foramen; VA calc., vertebral artery calcification; Ped. scl., pedicle sclerosis; Intra-TF calc., intra-TF calcification

* with bone sclerosis; † 50% occupation; parenthesis, number of nondominant VA stenoses within the total number

Bold, both UV j. and Facetj. osteophytes caused stenosis in the right VA of level C4/5 in one case, resulting in a total of 49 VA stenoses and a total of 50 causal features (including the number of cases with no bony features).

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Conclusion/discussion

- VA tortuosity and dominant VA diameters were greater in population with more degenerated cervical spine and in older population.
- VA tortuosity between transverse foramens impacts the risk of anterior surgeries.
- VA stenoses most occurred at the C3/4 and C5/6 levels and were mostly caused by spinal degeneration.
- In the case of surgical fusion, it is suggested to check for the existence of VA stenosis at those levels, because the addition of those levels in surgical fusion may be a better approach to avoid future occlusion of the stenosed VA.

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