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5-16-2022

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Recommended Citation

Joshi R, Abbas A, Wilseck J. Vertebral artery pathology: A case-based review of diagnosis and angiographic intervention. Presented at: American Society of Neuroradiology (ASNR) Annual Meeting; 2022 May 16-18; New York, NY

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Vertebral Artery Pathology: A Review of Diagnosis and Angiographic InterventionR Joshi¹, A Abbas¹, J Wilseck¹¹*Beaumont Health, Royal Oak, MI***Purpose**

The vertebral arteries are a critical component of the spinal and posterior intracranial circulation. Their associated pathologies are wide ranging including traumatic and congenital causes. Given the profound impact on patient management and outcomes, a careful evaluation of the vertebral artery with a firm understanding of normal anatomy is required to properly rule out pathology. This educational exhibit will provide an overview of the normal anatomy of the vertebral arteries and a case-based review of a large spectrum of their pathologies, including traumatic, spontaneous, iatrogenic, and congenital. Utilization of various imaging modalities including, CTA, MRA, angiography, and ultrasound will be discussed. Finally, discussion of available treatment options for these pathologies will be addressed. List of Educational Objectives: - Overview the normal anatomy of the vertebral arteries throughout their cervical and intracranial course. - Provide a case-based overview of a wide range of pathologies involving the vertebral arteries. - Discuss the associated clinical presentations of these pathologies and how imaging can guide management and affect the clinical course. - Cover the various diagnostic modalities available to evaluate the vertebral arteries and the appropriate indications for utilization. - Discuss available treatment options and indications for treatment.

Materials and Methods

N/A

Results

N/A

Conclusions

N/A

393**Vertebral Artery Variants: Embryology and Clinical Significance**H Bueno¹, E Nimchinsky²¹*Rutgers New Jersey Medical School, Newark, NJ*, ²*Rutgers University, Newark, NJ***Purpose**

A basic understanding of anatomic variations of the vertebral arteries and their branches is critical for the detection and reporting of clinically significant findings on diagnostic and preoperative CTA and MRA imaging of the head and neck. Clinically significant variants may be unusually vulnerable to injury, or compress adjacent structures. Others may be associated with other vascular anomalies, and should therefore prompt careful search. Several longitudinal and segmental anastomotic pathways exist which may compensate for abnormalities, whether congenital or acquired, in the normal flow pattern of the vertebrobasilar system, and their recruitment may result in predictable variant patterns, explaining otherwise confusing anatomic configurations.

Materials and Methods

The purpose of this Exhibit is to describe the development of the vertebral arterial system with the goal to explain the variants most commonly encountered in clinical practice. In addition, the clinical impact, if any, of these variants are addressed in the context of their particular anatomic relationships.

Results

The examples presented in this Exhibit were accrued during the course of normal neuroimaging in our Level 1 trauma and Comprehensive Stroke centers. The radiologists had no influence on whether or how the scans were performed, and this was a strictly retrospective study. CT angiograms of the neck or neck/head were performed according to our standard protocol, with bolus tracking, and 3D reformates and volume rendered reformats were generated from the original dataset. MRI of the cervical spine and brain were also performed according to our standard protocols on a 1.5T scanner.

Conclusions

Development of the vertebral arteries: 1. early development of the great vessels 2. segmental anatomy 3. carotid-vertebrobasilar anastomoses Specific variants and clinical relevance: 1. abnormal origin 2. abnormal entrance to transverse foramen 3. duplications 4. fenestrations 5. loops 6. PICA variants 7. persistent carotid-vertebrobasilar anastomoses