



Visual Case Discussion

Symptomatic basilar artery stenosis with left cerebellar and occipital stroke

Jonathan Fong DO*, Aldo Gutierrez MD, Zachary Coppola DO

Department of Emergency Medicine, Orange Regional Medical Center, Middletown, NY, United States



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Discussion

Intracranial atherosclerotic disease (ICAD) has had many changes in management within the past decade. Two trials, SAMMPRIS and VISSIT, were randomized control trials looking into stenting vs medical management for ICAD, but found aggressive medical management was superior to stenting. The results of the SAMMPRIS trial were later criticized on both the experience of the centers included in the study given the high periprocedural complication rate and the patient selection was not rigorous enough. After the conclusion of the SAMMPRIS trial the FDA in 2012 put higher restrictions upon the usage of stenting in patients with ICAD. Recently, there has been newer data from the WEAVE trial and CASSISS trial showing that stricter criteria with more experienced providers in high volume centers resulted in a significantly lower rate of periprocedural complications.

Visual case discussion

A 73-year-old woman presented to the emergency department for dizziness. She says that this dizziness is a lightheadedness sensation, intermittent, and occurring for the past 2 days. She was at the grocery store two hours prior to arrival when her dizziness worsened, she had a pre-syncopal episode, nausea, and had "spots missing in my vision on the left." An ambulance was called and she developed slurred speech en route to the hospital. She was admitted 5 days prior for newly diagnosed hypertension, hypertension urgency and diagnosed with a transient ischemic attack (TIA) after a CT brain, Ultrasound Carotids, and Echocardiogram 2 D before being discharged. Upon arrival she had no pain, resolved slurred speech, but was still experiencing dizziness and visual changes. Her past medical history only included hypertension and arthritis. She does not smoke. Her physical examination was pertinent for a blood pressure of 194 systolic and 84 diastolic. Her neurological examination had fluent speech, 5/5 motor strength in all

extremities, normal finger to nose, normal heel to shin, and normal facial motor strength, and intact light touch sensation

A CT brain and CTA of the head and neck were performed immediately. Finger glucose was 126 upon arrival. The CTA of the head and neck showed high grade basilar artery stenosis, see Figs. 1–3. On Fig. 1 shows a coronal and transverse slice just proximal to the area of stenosis, with Fig. 2 at the level of the stenosis, and Fig. 3 one slice distal to the area of occlusion. The results of the CTA were discussed with neurology who wanted a STAT MRI of the brain without contrast. Given her symptomatology and new finding of basilar artery stenosis she would be a candidate for possible intracranial intervention if there was a stroke on MRI. Intracranial arterial stenosis is an uncommon cause of strokes that has a high recurrent rate of strokes despite aggressive medical therapy [1]. The MRI found a small left sided cerebellum and left occipital stroke. This case was discussed with the nearest tertiary center's neurointerventional radiologist who accepted transfer for possible intracranial intervention and further management.

Question 1

What is considered aggressive medical therapy for patients with Intracranial Atherosclerotic Disease (ICAD)?

Answer options

- (a) Aspirin, blood pressure control < 140 systolic, LDL < 70
- (b) Aspirin and clopidogrel, blood pressure control < 140 systolic, LDL < 70
- (c) Warfarin, blood pressure control < 140 systolic, LDL < 70
- (d) blood pressure control < 140 systolic, LDL < 70

Correct Answer = B

The medical management group from the SAMMPRIS trial found

* Corresponding author.

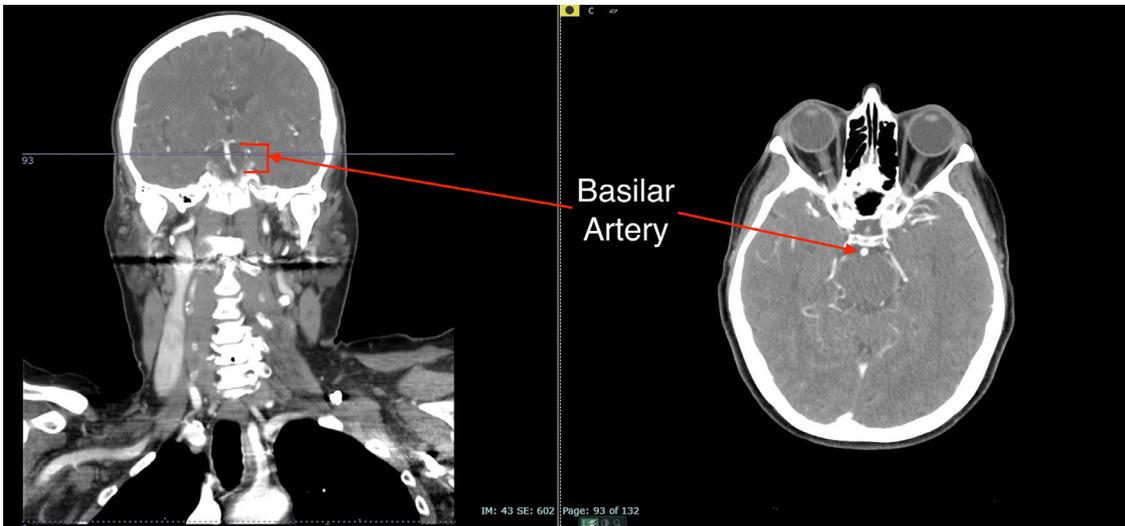


Fig. 1. – Coronal and transverse CT Angiogram of the head and neck distal to the area of basilar artery stenosis. Notice on the coronal image how stenotic the basilar artery appears.

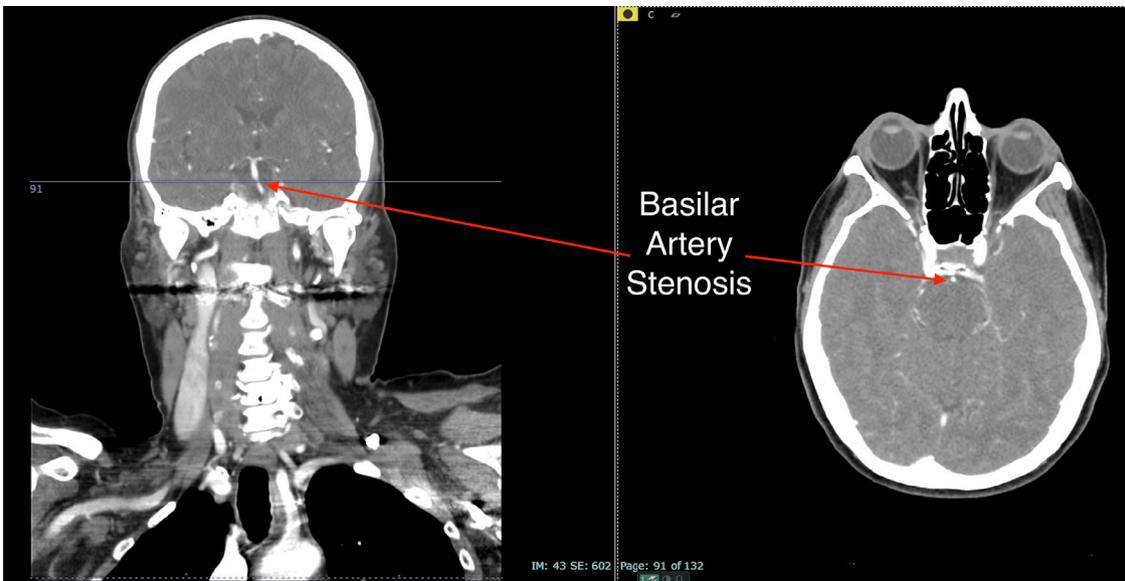


Fig. 2. – Coronal and transverse CT Angiogram of the head and neck at the area of basilar artery stenosis. Notice on the transverse image how much smaller the diameter of the basilar artery appears.

superiority compared to stenting and has become a guideline for medical management of patients with intracranial arterial disease. Patients in the SAMMPRIS trial were given 325 mg of aspirin daily and clopidogrel 75 mg daily for 90 days. Blood pressure control of 140 mg systolic and lowering a patient's LDL to less than 70 were also part of medical management. Warfarin versus aspirin were studied with the WASID trial and showed no benefit of warfarin over aspirin for patients with ICAD.

Chimowitz MI, et al. "Comparison of warfarin and aspirin for symptomatic intracranial arterial stenosis." *The New England Journal of Medicine*. 2005. 352(13):1305–1306. [WASID trial]

Chimowitz MI, et al. "Stenting versus Aggressive Medical Therapy for Intracranial Arterial Stenosis." *The New England Journal of Medicine*. 2015. 365(11):993–1003. [SAMMPRIS]

Question 2

What areas of the brain does the basilar artery provide circulation towards?

Answer options

- (a) Anterior coronary artery (ACA)
- (b) Middle coronary artery (MCA)
- (c) Posterior coronary artery (PCA) and cerebellar

Correct Answer = C

The basilar artery occurs from the convergence of the vertebral arteries and supplies blood to the posterior cerebral and cerebellar areas of the brain. The basilar artery also supplies blood to the pons, thalamus, and midbrain. Occlusion or thrombosis of the basilar artery has a high mortality rate.

Reinemeyer NE, Tadi P, Lui F. Basilar Artery Thrombosis. [Updated 2019 Jun 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2019 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK532241/>

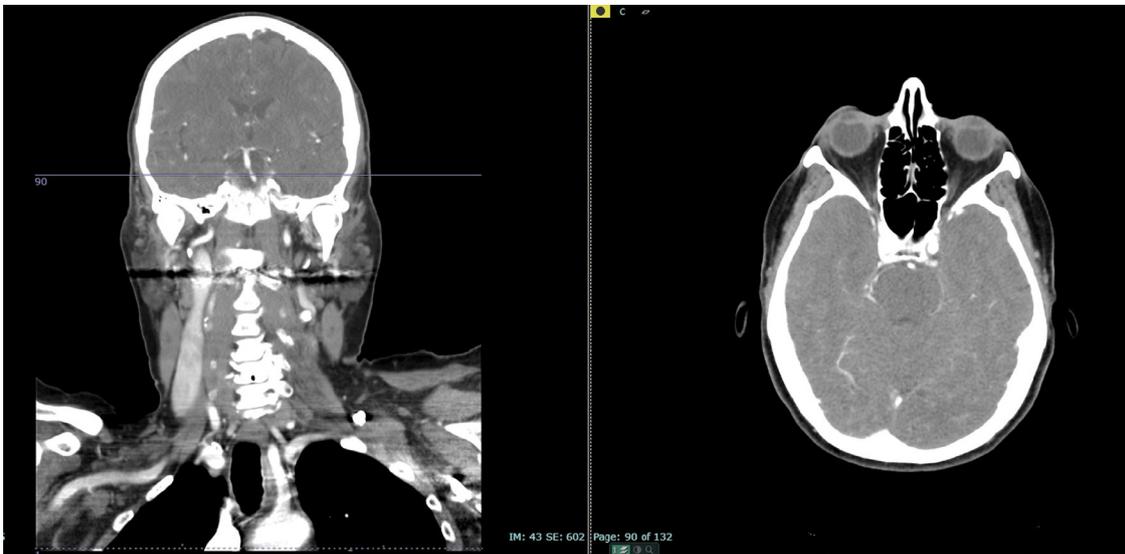


Fig. 3. – Coronal and transverse CT Angiogram of the head and neck proximal to the area of basilar artery stenosis.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.visj.2019.100675](https://doi.org/10.1016/j.visj.2019.100675).

Reference

1. Yu W, Jiang W.-J. Stenting for intracranial stenosis: potential future for the prevention of disabling or fatal stroke. *Stroke Vasc Neurol*. 2018;0:e000158 <https://doi.org/10.1136/svn-2018-000158>.