

# Hemodynamically significant ICA stenosis on CT Perfusion

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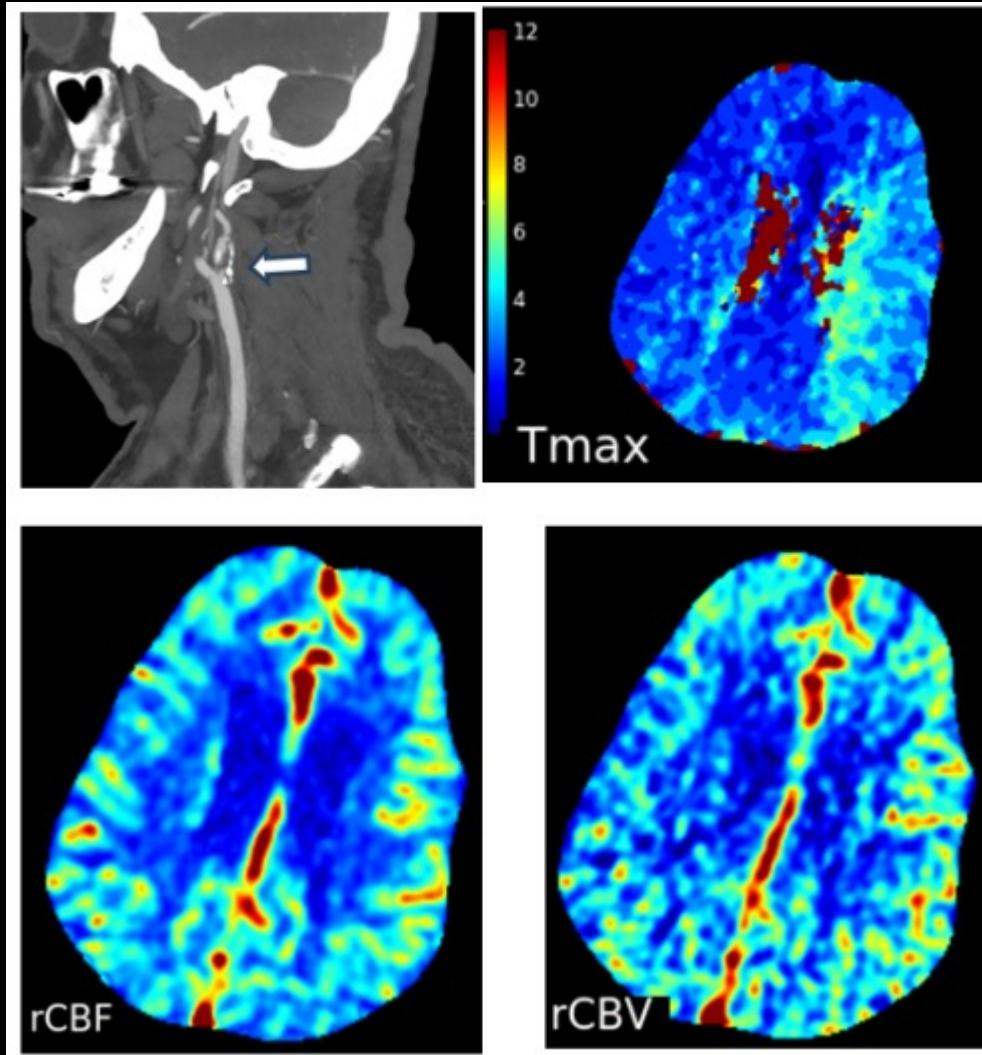


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# Clinical Presentation

- A 75 year old male with past medical history is significant for Type2 DM and coronary artery disease, represented to ED with altered mental status and hypotension.

# Imaging Discussion



- CTA head and neck study showed critical stenosis in the proximal portion of the left internal carotid artery.
- CT perfusion of the brain showed increased Tmax in left MCA territory with increased CBV and maintained CBF which is consistent with compensatory vasodilation in response to decreased cerebral perfusion in left MCA territory. There was no core infarct or penumbra.

# Management and Outcome

Patient returned to the baseline after correction of hypotension. He was already on dual antiplatelet therapy and statin and continued follow up was agreed.

# Take Home Points

- In the setting of hemodynamically significant internal carotid artery stenosis Tmax prolongation occurs. In order to compensate for that prolongation and maintain CBF, arterioles and capillaries become vasodilated. This autoregulation is known as cerebrovascular reserve.
- Understanding CT perfusion patterns other than stroke is very helpful to make the diagnosis and guide the treatment.

# References

- Li ML, Jin ZY, Zhang XB, Gao S, Lu JJ, Xue HD, Zhao WM, Wang Y, Zhang YQ. [CT perfusion in evaluation of cerebral hemodynamics in carotid artery stenosis]. Zhongguo Yi Xue Ke Xue Yuan Xue Bao. 2006 Feb;28(1):5-8. Chinese. PMID: 16548178.