

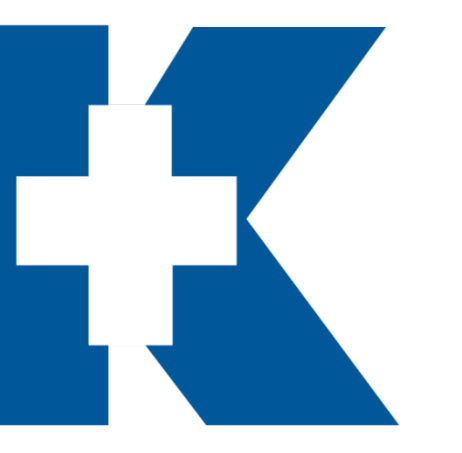


Ultrasound Spot Sign for Central Retinal Arterial Occlusion

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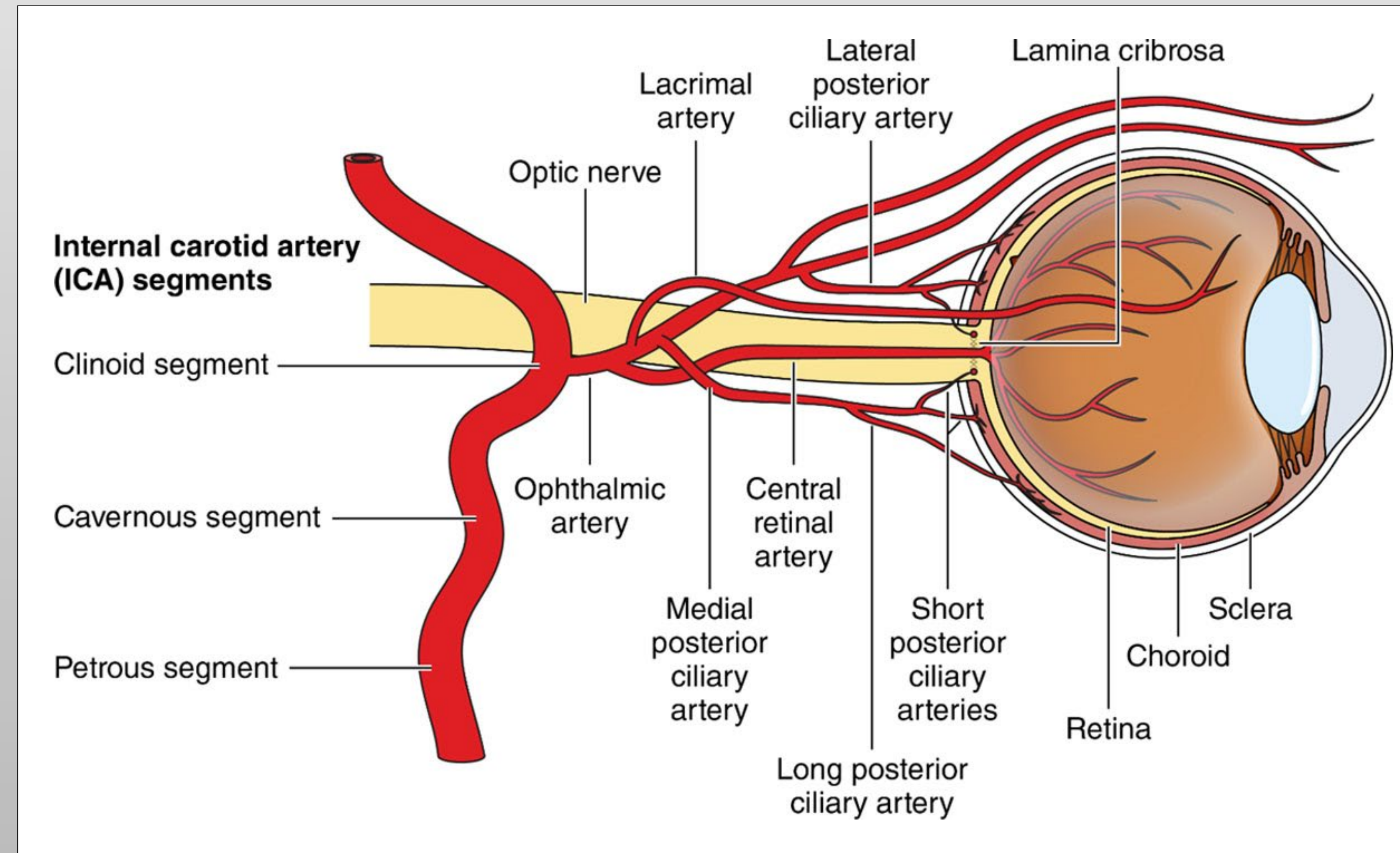


INTRODUCTION

Central retinal artery occlusion (CRAO) presents with sudden, painless, monocular vision loss due to arterial interruption to the retina. It is a form of stroke with similar approach and management; meaning time-to-treatment must be aggressively managed to optimize outcomes. Although a clinical diagnosis, in most cases it is difficult due to the lengthy differential with similar findings, including high-risk CRVO, retinopathy, glaucoma, retinal detachment, cerebrovascular accident, vitreous hemorrhage, and optic neuropathy. Diagnosis usually requires ophthalmology and fluorescein testing, which are not in many community emergency departments. However, ultrasound can be a fast and effective alternative, particularly when “spot sign” is visualized.

CASE

A 68-year-old female with a history of cataract surgery presented to the ED with blindness. One hour ago, she was relaxing in her reclining chair at home when she had sudden loss of vision in her left eye, without any pain. She denied any other symptoms, trauma, or recent activities that would increase her risk of foreign body in her eye. She was well appearing but unable to count fingers from her central vision while able to do so in the periphery and had an afferent pupillary defect. TonoPen measured normal eye pressures. Finally, a bedside ocular ultrasound was conducted, revealing retrobulbar “spot sign” consistent with CRAO. Ocular massage was unsuccessful, while transfer arrangements were made to a tertiary center for ophthalmology and neurology consultation. On arrival to the tertiary center, confirmatory testing was completed with ophthalmology and neurology and patient received alteplase with resolution of her deficits. She was discharged home with aspirin, clopidogrel, and neurology and vascular surgery follow-up.



DISCUSSION

“Retrobulbar spot sign” is a specific ultrasound finding of CRAO. It is theorized to be direct visualization of calcified embolic material in the central retinal artery and is estimated to be able to be visualized in 51% of embolic retinal artery occlusion cases. Presence of this sign has also been shown to possibly be a prognostic indicator for thrombolytic treatment and may indicate a higher likelihood of developing secondary retinal ischemia. More studies are required to solidify this relationship but are worth investigating.

CONCLUSIONS

In cases of CRAO, prolonged time to diagnosis can be devastating to the long-term outcomes of patient vision, health, and independence. Rapid diagnosis is required in the emergency department. In departments lacking on-call ophthalmology, most testing modalities lack either the time benefit or precision in assisting in diagnosis. With ultrasound now ubiquitous in emergency departments with improving emergency physician skills, using ultrasound to diagnose CRAO can significantly improve time to diagnosis, time to definitive treatment, time to resolution, and patient outcomes.

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