

An 83-year-old female was admitted with sudden loss of vision in her right eye which started last night. She had a hip replacement surgery for right hip fracture 2 weeks ago and has been in rehabilitation since then. One day prior to this admission, she heard a "pop" while twisting her right hip and the X-ray showed a periprosthetic fracture. The orthopedics consult suggested a hip revision within a week.

Past medical history (PMH)

Rheumatoid arthritis, hypertension (HTN), atrial fibrillation (AFib).

Medications

Prednisone, warfarin, metoprolol, lisinopril.

Physical examination

Blindness in right eye, otherwise unremarkable.

What is the most likely diagnosis?

Central retinal artery occlusion.

What would you do?

Urgent ophthalmology consultation.

CBCD, CMP, INR.

ESR, CRP.

Carotid duplex.

TTE/TEE.

What happened?

An urgent ophthalmology consult was called who confirmed the diagnosis of central retinal artery occlusion (CRAO). Fundoscopy revealed retinal edema and emboli in the branches of the right retinal artery.

Heparin IV was started but patient's vision did not improve.

ESR was 46 mm/hr, lower than the baseline value of 51 mm/hr recorded 2 months ago, CRP was 1.4 mg/dL. INR was 2.9.

The carotid duplex did not show hemodynamically significant stenosis in either carotid bifurcation on gray scale imaging and color Doppler analysis. Velocity parameters and waveforms were compatible with stenosis in the 0-29% range in each ICA by NASCET criteria. There was antegrade flow bilateral cervical vertebral arteries.

TEE did not show thrombi in the left atrium.

The most likely reason for central retinal artery occlusion in this patient was fat embolism from hip fracture.

What happened next?

In 2 days, the patient was able to see fingers in the peripheral visual field of her right eye but not to count them. The serial ophthalmoscopy exams confirmed the diagnosis of CRAO. She had a revision of right hip replacement and was discharged to a rehabilitation facility with ophthalmology follow-up.

Final diagnosis

Central retinal artery occlusion.

Summary

CRAO is an ocular emergency. It presents with acute, painless loss of monocular vision. CRAO is rare with an incidence of approximately 1 to 10 in 100,000 and is considered a form of stroke.

Mean age of patients is 60-65 years, more than 90% of patients with CRAO are over the age of 40 years. CRAO almost never occurs in both eyes simultaneously, but it may occur sequentially. The vision loss is severe, usually leaving no more than a small temporal island of vision. Most affected patients can see only hand motions.



Figure 1. BRAO (Branched Retinal Artery Occlusion). Multiple yellowish refractile bodies can be seen scattered throughout the arterioles in the superior arcuate region. Source: [University of Iowa](#) allows visitors/health care professionals to duplicate portions of the site for personal or educational use without seeking permission from the authors.

On fundusoscopic examination, ischemic retinal whitening is seen immediately after an occlusion of the central retinal artery. A "cherry red spot" appears in the macula, where the retina is thinner and the retinal pigment epithelium and choroidal vasculature can be seen.

ESR and CRP should be measured in all patients over age 50 with CRAO to exclude GCA. Cardiogenic embolism should be ruled out in patients in whom carotid disease has been excluded.

CRAO has a poor prognosis for spontaneous recovery of vision since irreversible retinal injury occurs within 100 minutes of arterial occlusion. No treatment has been proven to improve visual outcomes.

Preliminary reports of intraarterial thrombolysis appear promising if the procedure is performed within six hours of onset of CRAO.