Central Retinal Artery Occlusion

Central retinal artery occlusion (CRAO) can cause ischemia to the sensitive tissue of the retina resulting in vision loss that can be permanent. Etiologies for CRAO are mostly based in thromboembolic phenomena from diseases such as atherosclerosis, atrial fibrillation, and giant cell (temporal) arteritis. Sudden, painless monocular vision loss or a "descending curtain" view are classic symptoms described by patients. On fundoscopy, there may be retinal plaques, a grayish discoloration to the retina, or a cherry red spot on the macula. Ultrasound is helpful in diagnosis. Management includes immediate ocular massage and lowering of intraocular pressure to prevent permanent damage.



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Etiology

Atherosclerosis
Clogged Artery-archer
Atherosclerosis may result in atheroma formation, particularly in the common carotid artery or its branches. CRAO can occur if a big enough part of an atheroma dislodges and embolizes to the retinal artery.

Atrial Fibrillation
Atria-heart Alarm-clock
Atrial fibrillation is well-known to cause thromboembolic phenomena. A mural thrombus in the heart can embolize to the aorta, then up the neck via the carotid artery, then into the eye via the retinal artery.

Giant Cell (Temporal) Arteritis
Giant Cell (Temple) of Arteries
Giant cell (temporal) arteritis is another etiology of CRAO. The inflammatory disease may affect the retinal artery. If the inflammation is significant enough, the retinal artery may become occluded.

Clinical Features

Sudden Painless Monocular Vision Loss
No-sign-pain-bolts Darkened-One-Eye
The most telling sign of CRAO is sudden, painless monocular vision loss as blood supply to the retina becomes compromised.

Descending Curtain
Down-Arrow Curtain
A "descending curtain" is often described by patients with CRAO. They may also describe amaurosis fugax, which is painless vision loss that only lasts for a few seconds to minutes. This may be coincident at the time of presentation or occurred in the past.

Fundoscopic Findings

Retinal Plaques
Red-Tin Plaques
On fundoscopy, retinal plaques may be seen. These appear as pale-yellow dots on the retina.

Grayish Retinal Discoloration
Gray-coloring on Red-tins
As the retina becomes ischemic from compromised blood flow, it may take on a grayish discoloration.

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Cherry Red Spot on Macula

Cherry-eyes

As the nerve fiber layer becomes edematous from cellular ischemia, the macula may be more clearly distinguished against a backdrop of grayish-white discoloration. This is described as a cherry red spot.

Diagnosis

Ultrasound

Ultrasound-machine

Ultrasound is important to rule out temporal arteritis as well as carotid artery atheroma. Other investigations for inflammation are also performed e.g. ESR.

Interventions

Ocular Massage

Eye Massage

A patient presenting with CRAO is an emergency as vision may be permanently lost if retinal blood flow is not restored. Careful ocular massage may be performed to help dislodge the embolus and move it distally to decrease the area of infarction. Other interventions include inhaling a mixture of carbon dioxide and oxygen, which helps to vasodilate.

Reduce Intraocular Pressure

Down-arrow Draining-eye

Decreasing intraocular pressure is important to prevent further ischemia. This may be accomplished pharmacologically (e.g. acetazolamide, mannitol, vasodilators) or procedurally (e.g. paracentesis, surgery). Steroids can help reduce inflammation quickly in cases of giant cell (temporal) arteritis.<br open="" style="-webkit-text-stroke-width: 0px; background-color: rgb(255, 255, 255); box-sizing: border-box; color: rgb(39, 43, 51); font-family: ;">

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