Central Retinal Vein Occlusion

Central retinal vein occlusion (CRVO) can be a complication of several systemic diseases like hypercoagulability, hypertension, or diabetes mellitus. The non-ischemic subtype presents with mild to moderate vision loss with sparse dot-blot and/or flame hemorrhages on fundoscopy. The ischemic subtype may present with sudden, severe pain and visual loss. Several dot-blot and flame hemorrhages, described as a "blood and thunder" appearance, along with cotton wool spots and papilledema may be evident on fundoscopy. Treatment for non-ischemic CRVO involves observation and treating the underlying etiology while ischemic CRVO may require laser photocoagulation or intravitreal VEGF inhibitors.



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Etiologies

Hypercoagulability
Hiker-clogs
Hypercoagulability can be defined as the tendency to have thrombosis as a result of certain inherited and or acquired defects. Hypercoagulability is common etiology for CRVO as a venous thrombosis in the eye can occlude outflow of blood.

Hypertension
Hiker-BP
Hypertension is most often associated with atherosclerosis. Nearby arterial atherosclerosis is the most common cause of occlusion of the central retinal vein.

Diabetes Mellitus
Dyed-bead-pancreas
Diabetes mellitus is a metabolic disorder characterized either by insulin deficiency or resistance which causes hyperglycemia.

Clinical Features

Non-Ischemic
Nun with Ice-ischemia
Retinal vein occlusion can be either non-ischemic or ischemic. Non-ischemic CRVO is a subacute process where blood supply to the retina is not compromised.

Mild to Moderate Vision Loss
Mild to Moderate Blinds
In non-ischemic CRVO, vision loss is mild to moderate, but not severe or total. It can be worsen while walking and can be improved throughout the day.

Sparse Dot-blot and Flame Hemorrhages
Dot-blot and Flame Shaped Hemorrhage-Hammer
A few scattered dot-blot and flame hemorrhages may be seen in non-ischemic CRVO. Venous occlusion causes metabolic waste products to accumulate causing increased back-pressure to capillaries and then extravasation.

Ischemic
Ice-ischemia
Retinal vein occlusion can be either non-ischemic or ischemic. Ischemic CRVO carries the poorer prognosis and involves a drastically reduced blood supply to the retina.

Sudden, Painless Vision Loss
Sudden No Pain-bolt and Blinds
The vision loss in ischemic CRVO is often sudden, severe, and painless. Near-total blindness may occur.

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"Blood and Thunder" Appearance

Blood and Thunderous-clouds

On fundoscopy, the retina may be described as having a "blood and thunder" appearance from all the dot-blot and flame hemorrhages across the retina.

Cotton Wool Spots

Cotton Wool-sheep with Spots

Cotton wool spots may also be evident. They are fluffy, white patches on the retina due to axoplasmic stasis.

Papilledema

Popeye-edamame

Papilledema is a critical finding, which indicates increased intra-ocular pressures.

Interventions

Observation if Non-Ischemic

Observatory with Nun-ice-ischemia

The management depends on the type of CRVO. Observation is best for non-ischemic CRVO, but the underlying cause (e.g. hypertension, hypercoagulability, diabetes) must be addressed and treated.

Laser Photocoagulation

Photo-clogs with Laser

Panretinal laser photocoagulation can be used to treat ischemic CRVO. This procedure involves the use of a laser to burn retinal tissue in an effort to avoid neovascularization from ischemia.

VEGF Inhibitors

VEGetable-Farmer in Inhibiting-chains

VEGF inhibitors like ranibizumab and bevacizumab can be administered as an intra-vitreal injection for ischemic CRVO. These also inhibit neovascularization.

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