
بسم الله الرحمن الرحيم
((وَمَا تَوْفِيقِي إِلاَّ بِاللَّهِ
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Recent Updates In Retinal Vein Occlusion

An essay
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Sara Daoud

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List of Abbreviations

AMD	*Age related macular degeneration*
ASNV	*Anterior Segment Neovascularization*
BCVA	*Best Corrected Visual Acuity*
BM	*Bruch's membrane,*
BRV	*Branch Retinal vein*
BRVO	*Branch Retinal vein occlusion*
BRVOS	*Branch Vein Occlusion Study Group*
CMT	*Central macular thickening*
CRAI	*cilioretinal arteriolar insufficiency (CRAI)*
CFT	*central foveal thickness*
CRV	*Central Retinal vein*
CRVO	*Central Retinal vein occlusion*
DEX	*Dexamethasone*
ELM	*External limiting membrane*
ERG	*Electroretinography*
FA	*Fluorescein Angiography*

FDA	*United States Food and Drug Administration*
FAF	*Fundus Autofluorescence*
GCL	*Ganglion cell layer*
GL	*Gride laser*
HRB	*High Reflectance Band*
INL	*Inner nuclear layer*
IOP	*Intraocular pressure*
IPL	*Inner plexiform layer*
IVBI	*Intravitreal bevacizumab injection*
IVFA	*Intravenous Fluorescein Angiography*
IS\OS	*Inner segment/outer segment of photoreceptors*
logMAR	*Logarithm of the minimum angle of resolution*
ME	*Macular Edema*
mfERG	*Multifocal Electroretinogram*
NFL	*Nerve fiber layer*
NVI	*Neovascularization of the Iris*
OCT	*Optical coherence tomography*

ONL	*Outer nuclear layer*
OPL	*Outer plexiform layer,*
PDT	*Photodynamic therapy*
PhNR	*Photopic negative response*
PIRW	*Perivenular Ischemic Retinal Whitening*
PRP	*Panretinal photocoagulation.*
RPE	*Retinal pigment epithelium*
PRN	*When necessary*
PSNV	*Posterior Segment Neovascularization*
RVO	*Retinal vein occlusion*
SD-OCT	*Spectral-domain optical coherence tomography*
SGL	*Subthreshold Grid Laser*
TA	*Triamcinolone Acetonide*
VEGF	*Vascular Endothelial Growth Factor*

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Aim of the Essay

Review the retinal vein occlusion as risk factors, etiology, classifications, investigations and presentation of different treatment options used now for treatment of the retinal vein occlusion.

Dermography

RVO is the second only to diabetic retinopathy as the most common retinal vascular disease. It is estimated that 16.4 million people in the world have RVO. In a population based study (pooled data involving approximately 50,000 participants from the United States, Europe, Asia, and Australia) RVO was the fifth most frequent cause of unilateral blindness ***(Rogers et al., 2010).***

The prevalence of RVO has shown an age and sex standardized prevalence of 5.20 per 1,000 for any form of RVO. The prevalence of branch RVO (BRVO) was higher than central RVO (CRVO), increased with age and there was no difference between the sexes. Over 50 % of cases of RVO occur in patients older than 65 years of age ***(Mall et al., 2013).***

CRVO in young adults is uncommon: only 10–15% of patients with CRVO are under 40 years of age ***(Marcucci et al, 2010***).

The risk of developing a second episode of the same or different types of RVO in the same eye was 1% within 2 years and 2.5% within 4 years ***(Hayreh, 2005).***

The prevalence of bilateral CRVO has been reported to be 6.3– 12%. Bilaterality of CRVO seems higher than bilaterality of BRVO ***(Rogers et al., 2010).***

The risk of BRVO at each vein-posterior crossing is about 12 times higher than each vein-anterior crossing. Occlusion in inferotemporal branches occurs in 22–43% of cases, macular branches in 24%, and nasal branches in 0.5–2.6%. As nasal BRVOs are associated with fewer complications and better vision than other types, they are often under detected ***(Berger et al., 2015).***

Familial clustering of RVO (CRVO in particular) has been reported but these reports have been few in number. It is interesting that such cases are more often bilateral, with a younger age at onset than sporadic cases ***(Karia, 2010).***

Etiology

The etiology of RVO is still incompletely known. An external compression of the vein wall is suggested ***(Cossca et al., 2011).***

The tract of central retinal vein passing through the lamina cribrosa is the most frequent site of occlusion as central retinal veins and arteries are present within the same adventitial sheath

(Figure 1), arterial stiffness can affect neighboring veins, leading to CRVO ***(Marcucci, 2010).***

Several reasons are responsible for this localization:

(1) As ageing occurs, the collagen tissue of the lamina cribrosa becomes thicker and stiffer causing a compression of the vascular wall.

(2) Degenerative processes at the expense of the central retinal artery may cause compression on the contiguous venous wall.

(3) The consequently turbulent flow enhances the risk of endoluminal thrombus formation ***(Marcucci, 2010).***

BRVO may be the result of a combination of vein compression at arteriovenous crossings, degenerative changes within venous walls, and hypercoagulability ***(Jaulim et al., 2013).***

The turbulent flow together with the preexisting endothelial vascular damage from the different conditions creates a local environment favorable to intravascular thrombus formation. Once the venous flow is compromised or interrupted, retinal ischemia ensues downstream from the occlusion site. Retinal ischemia is one of the most important up-regulators of vascular endothelial growth factor (VEGF) production ***(Pe'er et al., 1995).***