

Recent trends in management of retinal vein occlusion

Essay

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LIST OF ABBREVIATIONS

AMD	Age related macular degeneration
ANA	Antinuclear antibody
aPTT	Activated partial thromboplastin time
BCVA	Best-corrected visual acuity
BRAVO	Ranibizumab for the Treatment of Macular Edema after Branch Retinal Vein Occlusion Study: Evaluation of Efficacy and Safety
BRVO	Branch retinal vein occlusion
BVOS	Branch vein occlusion study
CBC	Complete blood cell count
Cc	Cubic centimeter
Cm	Centimeter
CNV	Choroidal neovascularization
CRA	Central retinal artery
CRV	Central retinal vein
CRVO	Central retinal vein occlusion
CRUISE	Ranibizumab for the Treatment of Macular Edema after Central Retinal Vein Occlusion Study: Evaluation of Efficacy and Safety
CVOS	Central vein occlusion study
ERG	Electroretinography
FAZ	Foveal avascular zone
FDA	Food and Drug Administration
FU	Fluorouracil
Hr	Hour
ILM	Internal limiting membrane
IOP	Increase intraocular pressure
IVB	Intravitreal bevacizumab
ME	Macular edema
Mg	Milligram
ml	Milliliter
mm	Millimeter
MVR	Micro-vitreo-retinal blade
NEI	National eye institute
Ng	Nanogram

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NSAID	Non-steroidal anti-inflammatory drugs
NSCLC	Non-small cell lung cancer
NV	Neovascularization
NVD	Neovascularization of the disc
NVE	Neovascularization elsewhere
NVG	Neovascular glaucoma
OCT	Optical coherence tomography
ONSD	Optic Nerve Sheath Decompression
PAS	Peripheral anterior synechia
PT	Prothrombin time
PDR	Proliferative diabetic retinopathy
PDT	Photodynamic therapy
PFC/PRP	Panretinal photocoagulation
RNA	Ribonucleic acid
RON	Radial Optic Neurotomy
RPE	Retinal pigment epithelium
PRP	Panretinal photocoagulation
RVO	Retinal vein occlusion
SPEP	Serum protein electrophoresis
SCORE	The Standard Care versus Corticosteroid for Retinal Vein Occlusion
TAA	Triamcinolone Acetonide
TKIs	Tyrosine kinase inhibitors
μm	Micrometer
VEGFR	VEGF receptor
VEGF	Vascular endothelial growth factor
VO	Vein occlusion

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Introduction

Vein occlusion is a common retinal vascular disorder. It constitutes the second most common retinal vascular disorder, the non ischemic type being more common than the ischemic type.

Its diagnosis depends on taking good history, careful examination and investigations.

History and systemic workup is mandatory stressing on certain systemic diseases; hypertension, cardiovascular diseases, diabetes mellitus and blood dyscrasias. ***(Rehak J & Rehak ,2008)***

Symptoms may appear as visual loss whether gradual or sudden, photophobia and may progress to blind painful eye especially with ischemic forms of central retinal vein occlusions.

Full ophthalmic examination in the form of visual acuity, pupillary reactions, anterior and posterior segment examination is to be done aiming at determining the type of vein occlusion whether ischemic or non ischemic, also gonioscopy is of value in both diagnosis and follow up. ***(Central Vein Occlusion Study Group, 1997)***

Certain investigations are of value to approach the diagnosis like Optical coherence tomography (OCT) which is useful in detection of subtle macular oedema even in the presence of

hemorrhages, Fundus fluorescein angiography (FFA) also can detect retinal capillary non perfusion, posterior segment neovessels and macular oedema, and Electroretinogram (ERG) may differentiate ischemic from non ischemic types of central retinal vein occlusion. **(Rehak J & Rehak, 2008)**

Treatment of vein occlusion is considered to be challenging as till now there is no effective definitive medical treatment.

Different studies have been done to compare efficacy and safety of different lines of treatment of both central and branch vein occlusions and provides valuable data and protocols that became a milestone in recent practice. **(Branch Vein Occlusion Study Group, 1984)**

Medical treatment in the form of injection of triamcinolone, bevacizumab and ranibizumab, and laser treatment in the form of pan retinal photocoagulation (PRP) and macular grid photocoagulation was proved to be of value with certain indications in both branch and central retinal vein occlusions. **(Roth et al, 2008)**

Vitrectomy in addition to other new techniques such as chorioretinal anastomosis & arteriovenous decompression have efficacy that is still controversy. **(Arevalo et al, 2008)**

Aim of the work

The aim of this work is to highlight the recent trends in management of central and branch retinal vein occlusion whether medical or surgical showing and comparing their benefits & their drawbacks.

Retinal anatomy

The retina is a diaphanous, transparent tissue that lines the inner posterior three fourths of the eye wall. **(McDonnell et al, 1989).** It extends from the macula in the posterior pole to the ora serrata anteriorly where it becomes contiguous with the non pigmented epithelium of the pars plana ciliaris. It is loosely adherent to the underlying pigment epithelium, and the two tissue layers can easily be separated in postmortem specimen. The only firm attachments of the retina are at the margins of the optic disc and at the ora serrata. The retina also is attached to the overlying vitreous in a circular band around the retinal periphery, referred to as the vitreous base. Other points of attachment between the retina and the vitreous may exist around the optic disc and in the macular region. **(Nussbaum et al, 1981).**

A cross section of a low-power histologic preparation of the retina in the region immediately peripheral to the area centralis shows it to have ten layers. From internally (the side toward the vitreous), the layers are as follows: **(McDonnell et al, 1989).**

1. The internal limiting membrane
2. The nerve fiber layer
3. The ganglion cell layer

4. The inner plexiform layer
5. The inner nuclear layer
6. The outer plexiform layer
7. The outer nuclear layer
8. The external limiting membrane
9. The rod and cone inner and outer segments
10. Retinal pigment epithelium

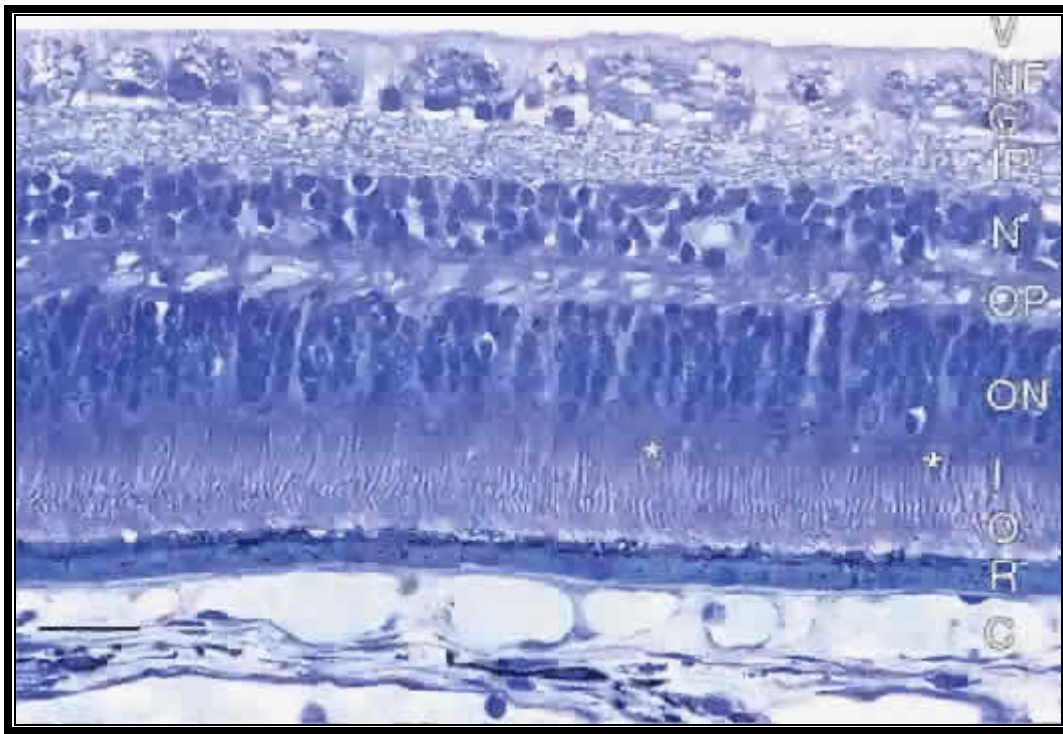


Figure (1)

Light micrograph of meridional section of human retina showing the characteristic cell layers. C, choroid; R, retinal pigment epithelium; O, photoreceptor outer segments; I, photoreceptor inner segments; *, cone inner segments; ON, outer nuclear layer; OP, outer plexiform layer; N, inner nuclear layer; IP, inner plexiform layer; G, ganglion cell layer; NF, nerve fiber layer; V, vitreous chamber. Bar = 30 μ m. (*Shahidi et al, 1990*)