

EYE IS THE WINDOW OF THE BODY – A CASE OF MULTIPLE INFARCTS OF THE BRAIN WITH BILATERAL RETINAL VEIN OCCLUSIONS

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ABSTRACT : A 43 year old a case of CVA – multi infarct state in MRI and known case of Hypertension for 2 months on treatment .**On examination :** Vision was 6/6 in both eyes **Fundus examination : Right eye :** Gross arteriolar attenuation of vessels + with sclerosed vessel inferotemporally + ,circinate pattern of hard exudates present suggestive of minor BRVO .**Left eye :** Collaterals seen in the disc ,Gross arteriolar attenuation of vessels + with sclerosed vessel inferotemporally suggestive of multiple old BRVO. A case of multiple BRVO with multiple infarct in brain. Routine retinal examination is valuable for the assessment of stroke risk in patients with hypertension. The most important risk factor for BRVO is hypertension. Informed consent was taken from the patient

Aim: Timely evaluation of risk factors can reduce stroke-related mortality and morbidity in young patients with retinal vein occlusions

INTRODUCTION

The retinal vasculature is unique as it is the only part of the body where vessels can be visualized in vivo non invasively. It is here that cumulative changes in microcirculation – eg in Diabetes and Hypertension- can be observed. The retinal blood vessels which shows similar characteristic appearance in **embryologic, anatomic, and physiologic as the cerebral vessels** in the brain. Retinal microvascular abnormalities such as generalized arteriolar narrowing, focal arteriolar narrowing, arteriovenous nicking, and retinopathy, reflect arteriolar damage from hypertension and other processes [1]. In 1939, Keith, Wagener, and Barker showed that the severity of retinal microvascular abnormalities were predictive of mortality in patients with hypertension.[2].Retinal vein occlusion (RVO) is the second most common retinal vascular disease after diabetic retinopathy.[3] RVO is frequently seen in people older than 65 years, but it is an important reason for vision loss in young people. [4].It is relatively more common in men than female. The prevalence of BRVO and central retinal vein occlusion (CRVO) are about 0.6% and 0.1% respectively.[5].In young patients the determining factors that cause predisposition to RVO may affect the progress of the disease positively by decreasing the recurrence and its potential occurrence in the fellow eye. Accordingly, the potential etiological factors that cause RVO in young patients should be evaluated and must undergo careful systemic examination and detailed laboratory analysis.

Case report : A 43year old gentleman, residing in Villupuram, Tamil Nadu, South India, presented to the Ophthalmology OPD in Pondicherry with the chief complaint of slurring of speech for one day . He was admitted in the Neurology Ward and diagnosed as a case of cerebrovascular accident.(ischemic stroke) .He was a known case of systemic hypertension for 2 months on regular treatment . There was no history of blurring of vision, double vision, headache, nausea or vomiting. He did not have any other ocular complaints. General and systemic examination (CVS, RS & GIT) was within normal limits. CNS examination was unremarkable, except for slurring of speech. Vision in both eyes were 6/6, N6 .Anterior segment examination was within normal limits. Pupils and corneal sensation were normal.

Dilated fundus of the right eye showed a normal disc with a cup disc ratio of 0.3 and generalised arteriolar attenuation with sclerosis, dilated and tortuous veins. A:V 1:3 with arterio-venous crossing changes was present. There was circinate pattern of hard exudates in the inferotemporal quadrant along the inferotemporal arcade – suggestive of a **minor branch retinal vein occlusion**.**Dilated fundus of the left eye** revealed a normal disc

with a cup disc ratio of 0.3 with generalised arteriolar attenuation and sclerosis. Dilated and tortuous veins were noted, A:V ratio was 1:3 with arterio-venous crossing changes . A thick tortuous vascular loop was seen on the disc **suggestive of collaterals**. Few resolving hemorrhages also noted along the inferotemporal quadrant – **suggestive of an old BRVO**.

OCT of the right eye showed hard exudates with no macular edema .MRI brain showed multiple infarcts in **thalamic region (bilateral)** .Other investigations like FFA not done .

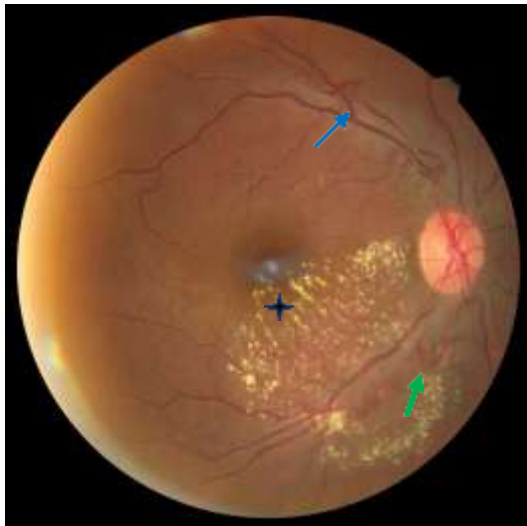


Fig.1 Dilated fundus right eye with AV crossing changes (blue arrow) ,hard exudates in circinate pattern (black star) and sclerosed vessel along inferotemporal quadrant (green arrow)

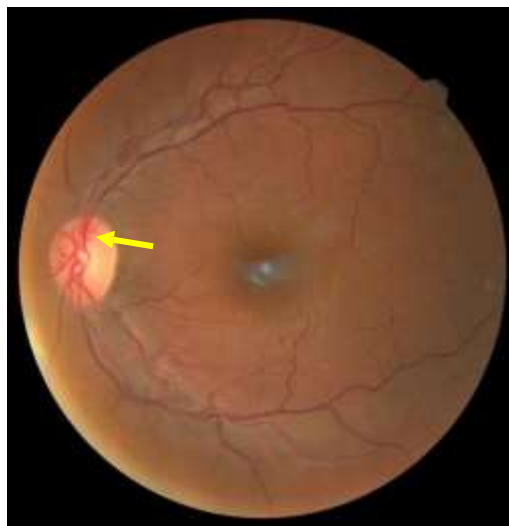


Fig .2 Dilated fundus of left eye with disc collaterals (yellow arrow)

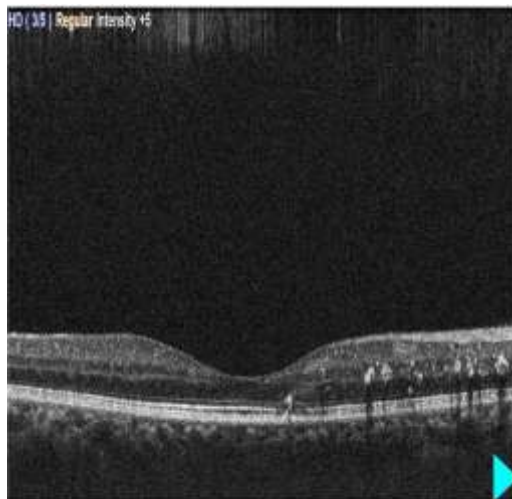


Fig.3 OCT of right eye shows hard exudates

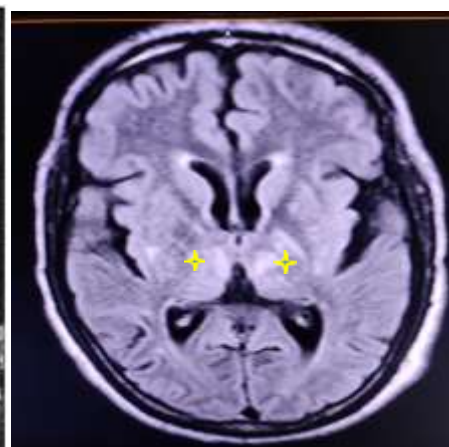


Fig.4 MRI brain showing multiple infarcts in thalamic region(bilateral) (yellow star)

DISCUSSION

The vessels all over the body are affected by vascular changes caused by systemic diseases like diabetes and hypertension. Other causes of vascular changes include-arteriosclerosis , hyperlipidemia ,hypercoagulable states . The second most common retinal vascular disorder after diabetic retinopathy is retinal vein occlusion with an incidence of 0.5–1.2% . BRVO patients present with varying degrees of retinal hemorrhages, tortuosity of retinal vessels, retinal ischemia and macular oedema (MO).**Macular edema** is the most common cause of visual impairment in patients with vein occlusions. Retinal arteries and veins share a common adventitial sheath, thickening of the arterial wall leads to compression of the retinal vein resulting in turbulent blood flow and potential thrombus formation. The risk factors for RVO include **hypertension, diabetes, hyperlipidemia, arteriosclerosis and older age**. More than 11 million ischemic strokes occur worldwide each year and the

incidence increases with age. An estimated 10% to 20% of these events occur in young people aged 18 to 50 years. RISK FACTORS in YOUNG - hypertension, smoking, dyslipidemia, diabetes, alcohol consumption, vasculitis, hypercoagulable states and obesity.

Chen et al conducted a 13-year population-based study in Taiwan NHIRD which showed RVO had a significantly higher risk of developing stroke (adjusted Hazard Ratio = 1.37) of which Ischemic stroke (adjusted HR = 1.36) is more common than Hemorrhagic stroke (adjusted HR = 1.34).[6]. Rim et al conducted a 9 year old nationwide population study which showed - RVO was significantly associated with the prospective development of stroke (HR- 1.48) with higher risk for ischemic stroke but not significant of hemorrhagic stroke. RVO displayed an approximately 2-fold higher hazard ratio(HR) in younger adults than in older adults.[7]. O'Mahoney PR et al conducted a meta analysis study which showed percentage of cases with any form of RVO which attributed to hypertension was 47.9% , diabetes mellitus was 4.9% and hyperlipidemia was 20.1%.[8]. Mitchell P et al conducted a – 7 year population based study which showed combined stroke events were more common in participants with retinopathy was 5.7% , with moderate and severe arteriovenous nicking (fig.6) was 4.2% , or with focal arteriolar narrowing (fig .5) was 7.2% compared with those without was 1.9% and concluded nondiabetic persons with retinopathy (microaneurysms, retinal hemorrhages) (fig.7) have an increased risk of stroke events, even after controlling other risk factors.

The presence of focal arteriolar narrowing or moderate to severe AV nicking was also associated with an increased risk of incident stroke, TIA, or stroke-related death, although these associations were nonsignificant after adjusting other cardiovascular risk factors.[9].

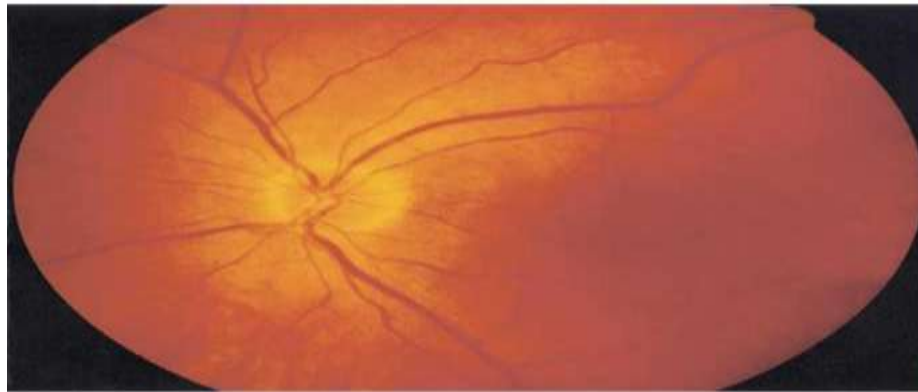


Fig. 5. Fundus photograph showing generalized arteriolar narrowing.

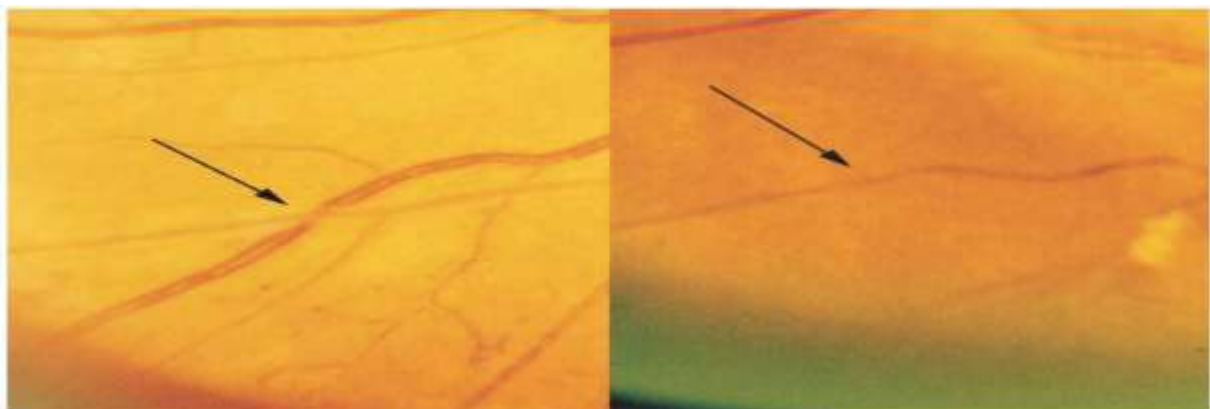


Fig. 6. Fundus photograph showing (left) arteriovenous nicking and (right) focal arteriolar

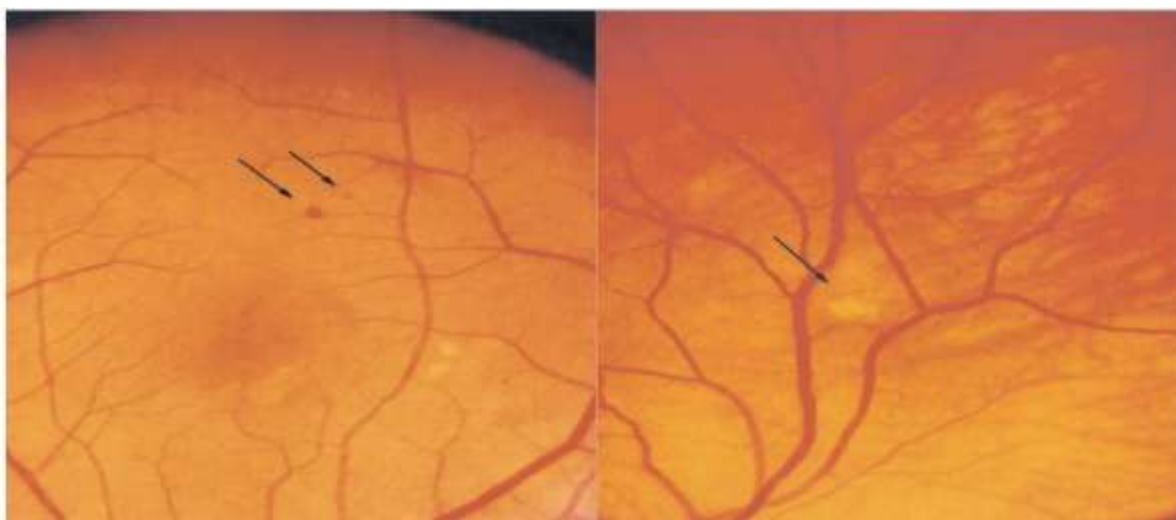


Fig. 7. Fundus photograph showing (left) microaneurysm and retinal hemorrhage and (right) cotton-wool spot

CONCLUSION

HYPERTENSION IS THE IMPORTANT RISK FACTOR FOR RVO .RVO could be

the first sign of cerebrovascular events especially in young patients. The RVO patients are at significantly greater risk for developing stroke. Immediate risk evaluation for stroke and proper treatment of stroke related risk factors in patients with RVO are needed to reduce the incidence of stroke-related mortality and morbidity. We recommend treatment for hypertension and diabetes and refer the patients with CRVO to primary care physician who are not already being treated by them. [10].It is the patient's best interest for the ophthalmologist to have a holistic view and treat the patient as a whole, rather than solely treating the ocular disease. Retinal vein occlusion, particularly in young patients, may be the prelude to more serious vascular issues including stroke etc which may even cause permanent disability or be fatal. A multidisciplinary approach must be taken and treatment of the cause should be strictly followed, along with regular follow up with both the physician and ophthalmologist.

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