

## Central retinal vein occlusion in young women: rare cases with oral contraceptive pills as a risk factor

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### ABSTRACT

Central retinal vein occlusion in young people is a rare entity. Here we present two cases of central retinal vein occlusion in young women using oral contraceptive pills. We found no other systemic problems and all routine investigations were within normal limits. The cases were managed with further avoidance of oral contraceptives and intravitreal injections of Bevacizumab (Avastin) to reduce the macular edema.

**Keywords:** Oral contraceptive, young, central retinal vein occlusion.

Retinal vein occlusion (RVO) is the second most common posterior segment eye disease causing blindness after diabetic retinopathy. Central retinal vein occlusion (CRVO) is a type of RVO which may be either ischemic or non-ischemic. The ischemic type is considered a seriously blinding disease. An individual with CRVO demonstrates a significant decrease in vision related quality of life. It affects men and women equally and occurs predominantly in elderly.<sup>1</sup> Ageing and underlying cardiovascular problems like hypertension, hyperlipidaemia and diabetes mellitus are considered as predominant systemic risk factors for its causation.<sup>1-10</sup> It is less common in younger patients. Blood dyscrasias may rarely predispose someone CRVO by causing hyperviscosity. Use of oral contraceptive pills (OC) is known to be a risk factor for various cardiovascular and cerebrovascular diseases besides RVO that lead to increased mortality.<sup>11</sup> There have previously been a few isolated case reports of patients developing RVO while taking the OC.

Here we report on two cases of central retinal vein occlusion in young women where OC was considered a risk factor.

### CASE STUDIES

#### CASE 1

A 23 year old married woman presented to the outpatient department of Tilganga eye centre with a history of blurring of vision in her right eye for one month. She had no other ocular or systemic complaints. She gave a history of taking oral contraceptive pills regularly over four months.

On examination, her vision in the right eye was 6/36 with no improvement by pin hole. Retinoscopy showed no significant refractive error. In the left eye vision was normal (6/6). Anterior segment findings in her right eye showed normal findings except the presence of relative afferent papillary defect (RAPD). On fundus

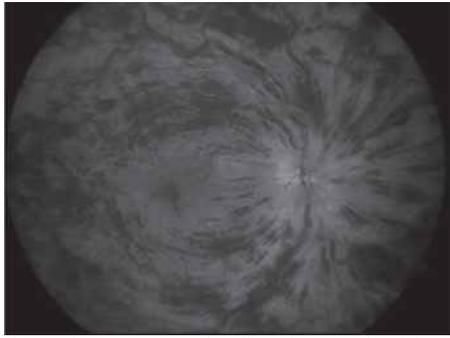
examination the optic disc was hyperemic, with blur margins. There was presence of intraretinal hemorrhages, dilated and tortuous retinal veins, hard exudates in all four quadrants (Fig. 1) and macular edema (Fig. 2). There was no neovascularization of the disc or elsewhere.

Intraocular pressure was 14 mm of Hg in both eyes by applanation tonometry. The patient was diagnosed with central retinal vein occlusion in the right eye. She was advised for investigations including cardiac and general checkup to rule out any other underlying systemic factors for her eye condition. Her CBC, Hb, platelets, bleeding time, clotting time, blood sugar, lipid profile, RA factors, C reactive protein, VDRL reports were normal. Her cardiac and other systemic examination findings were unremarkable.

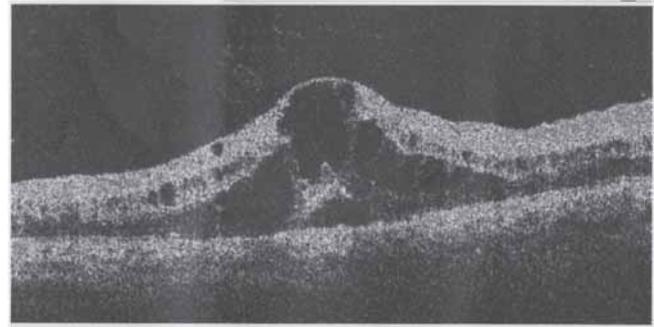
Her blood pressure was 120/80 mm of Hg.

With the normal ocular and systemic examination findings, the underlying risk factor for the central retinal vein occlusion could be due to intake of oral contraceptive pills. She was advised to stop the use of OC. To reduce the macular edema, she was treated with two injections of 1.25 mg intravitreal Bevacizumab (Avastin) over a 2 months interval.

On regular follow up at six weeks after first intra-vitreous injection of Bevacizumab her visual acuity improved to 6/18 with reducing retinal hemorrhages and macular edema. Patient was again treated with the second dose of intra-vitreous Bevacizumab at two months interval of first injection. She was seen six weeks after that. Visual acuity was found normal (6/6) and; there was no macular edema, and any residual scarring or pigmentations of macula. Patient was advised for follow-up at three monthly intervals. At her last follow-up after six months of second intra-vitreous injections, the vision was stable (6/6) with no macular edema, pigmentation and scar.



**Fig. 1.** Case 1 - Hyperemic disc, intraretinal hemorrhage, dilated and tortuous retinal veins and hard exudates in all four quadrants



**Fig. 2.** Case 1 - Macular edema

**CASE 2**

A 30 year old female from Kathmandu presented to our out patient department with the chief complaint being diminution of vision of three months duration in her left eye. She had no other ocular or systemic problems. She had history of taking oral contraceptive pills every 2-3 months for only 10-15 days at a time over the the last five years.

On examination, the visual acuity in right eye was 5/60 which was 6/24 with the -3.00 DS/ -1.50 DC \*135<sup>0</sup>

In the left eye, the presenting visual acuity was 2/60 with no improvement of vision by pin hole. There was no significant refractive error in the same eye.

RAPD was present in the left eye. Otherwise, anterior segment examination findings were unremarkable in both eyes.

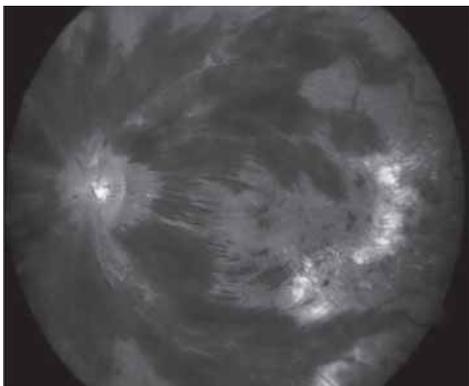
In the right eye, the optic disc was pink and round with sharp margins. The cup disc ratio was 0.4:1 with healthy neuroretinal rim. The macula and periphery was also normal. In the left eye, the disc was hyperemic, blurred disc margins, with a cup disc ratio of 0.4:1. There was presence of retinal hemorrhage, dilated and tortuous vessels and exudates in all four quadrants (Fig 3) with macular edema (Fig 4).

The intra-ocular pressure was 18 mm of Hg with applanation tonometry. Blood pressure was 110/70 mmHg.

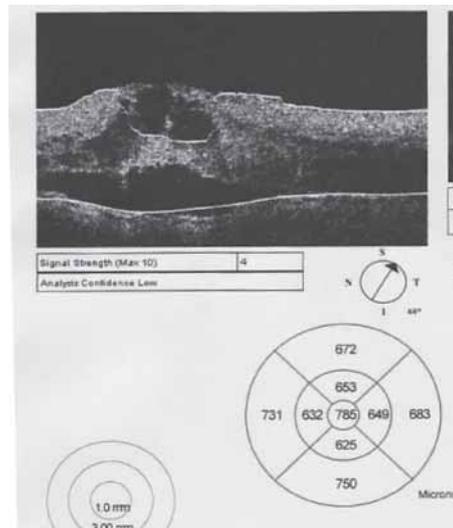
She was diagnosed as anisometropic amblyopia in her right eye and CRVO in the left eye. The patient was referred for general and cardiac evaluation to find out the systemic risk factors but the tests were unremarkable. All investigation reports (CBC, Hb, platelets, Bleeding time, clotting time, blood sugar, lipid profile, RA factors, C reactive protein, VDRL, Echocardiography) were also normal.

With the exclusion of all ocular and systemic causes, an oral contraceptive pills was considered a possible risk factor for the CRVO in her left eye. She had been advised for avoidance of OC use. Intravitreal Bevacizumab (1.25 mg) was given twice over a two months interval to reduce her macular edema.

The patient was reviewed after six weeks post Bevacizumab injections and her visual acuity was found to improve up to 6/60 with reducing retinal hemorrhages and macular edema. Patient was again treated with the second dose of intra-vitreous Bevacizumab at two months interval of first injection. Her visual acuity was improved to 6/18 with no macular edema but presence of residual pigmentary changes of macula on her six weeks second post injections follow-up. The visual impairment was thought to be due to the pigmentary changes of macula following prolonged edema. Patient was advised for follow-up at three monthly intervals. At her last follow-up after three months of second intra-vitreous injections,



**Fig. 3.** Case 2 - Hyperemic and blurred disc margins, retinal hemorrhage, dilated and tortuous vessels and exudates in all four quadrants



**Fig. 4.** Case 2 - macular edema

the vision was stable (6/18) with the presence of pigmentary changes of macula but without edema.

## DISCUSSION

Central retinal vein occlusion is characterized by sudden painless diminution of vision and fundus findings of intraretinal hemorrhage, dilated and tortuous retinal veins, swollen optic disc and macular edema.

Ischemic forms of CRVO are characterized by capillary non perfusion of at least 10 disc areas, as demonstrated by fluorescein angiography.<sup>1,2</sup> RAPD is marked and vision is usually poor in such cases. The incidence of iris neovascularization is high (up to 60.0%) in very ischemic eyes usually occurring at a mean of 3-5 months after the onset of symptoms leading to the complications like neovascular glaucoma, vitreous hemorrhage and tractional retinal detachment; three potentially blinding complications.<sup>1,2</sup>

The common mechanism for most forms of CRVO is due to thrombosis of the central retinal vein at and posterior to the lamina cribrosa.<sup>2</sup> Sometimes, an atherosclerotic central retinal artery may impinge on the central retinal vein causing turbulence, endothelial damage and thrombus formation.

Although CRVO can occur and lead to severe vision loss at younger ages, 90.0% of the patients are older than 50 years at the time of onset.<sup>2</sup>

Hypertension, diabetes mellitus and hyperlipidaemia are the common systemic associations of CRVO.<sup>1-10</sup> Hypermetropia and primary glaucoma are considered as ocular risk factors.<sup>1-2,7,12-15</sup>

Unusual diseases that affect the blood vessel walls or cause alteration in clotting mechanisms and blood viscosity may also be associated with CRVO-like pictures for examples, blood dyscrasia, dysproteinemias, causes of vasculitis (sarcoidosis, systemic lupus erythematosus) and hypercoagulable conditions like hyperhomocystenemia, protein S deficiency, and protein C deficiency besides the use of drugs like diuretics.<sup>1-2</sup>

Oral contraceptives (OC) have been previously implicated in CRVO besides their main effect on other cardiovascular, cerebrovascular problems that can lead to increased mortality.<sup>2,11</sup>

In a cohort study by Vessev et al. the only eye disease for which there was consistent evidence of a notable increase in risk in OC users was a retinal vascular problem.<sup>16</sup>

Likewise, the prevalence of RVO in female patients under 35 years taking the OCP was 66.0% in a large series by Kirwan et al.<sup>17</sup>

In the population based study by Scoditti et al, they reported the use of low oestrogen OC was associated with an increased risk of cerebral venous thrombosis and ischemic stroke, but not of retinal vein/artery thrombosis.<sup>18</sup>

Although CRVO is rare in early age groups, use of oral contraceptive pills could be a risk factor for its occurrence among young women.

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## REFERENCES

1. Clarkson G. John. Central retinal vein occlusion. In Ryan J. Stephen, editor. *Retina* (2<sup>nd</sup> Ed.). St. Louis, Missouri: Mosby 1994:1379-85.
2. American Academy of Ophthalmology. *Retina and vitreous; Basic and clinical science course, section 12. Singapore: 2007-2008: 136-45.*
3. Klein R, Klein BE, Moss SE, Meuer SM. The epidemiology of retinal vein occlusion. The Beaver Dam Eye Study. *Trans Amer Ophthalmol Soc* 2000; 98: 133-43.
4. Cugati S, Wang JJ, Rochtchina E, Mitchell P. Ten year incidence of retinal vein occlusion in an older population. The Blue Mountains eye study. *Arch Ophthalmol* 2006; 124: 726-32.
5. Lim LL, Cheung N, Wang JJ, et al. Prevalence and risk factors of retinal vein occlusion in an Asian population. *Brit J Ophthalmol* 2008; 92: 1316-9.
6. Shrestha RK, Shrestha JK, Koirala S, Shah DN. Association of systemic diseases with retinal vein occlusive disease. *J Nepal Med Assoc* 2006; 45: 244-8.
7. Klein R, Moss SE, Meuer SM, Klein BE. The 15 year cumulative incidence of retinal vein occlusion. The Beaver Dam eye study. *Arch Ophthalmol* 2008; 126: 513-18.
8. O'Mahoney PR, Wong DT, Ray JG. Retinal vein occlusion and traditional risk factors for atherosclerosis. *Arch Ophthalmol* 2008; 126: 692-99.
9. Hayreh SS, Zimmerman B, McCarthy MJ, Podhajsky P. Systemic diseases associated with various types of retinal vein occlusion: *Amer J Ophthalmol* 2001; 131: 61-77.
10. Teoh SL, Amarjeet K. A comparative study of branch retinal vein occlusion and central retinal vein occlusion amongst Malaysian patients. *Med J Malaysia* 1993; 48: 410-5.
11. Beral V, Hermon C, Kay C, Hannaford P, Darby S, Reeves G. Mortality associated with oral contraceptive use: 25 year follow up of cohort of 46, 000 women from Royal College of General Practitioners' oral contraception study. *BMJ* 1999; 318:96-100.
12. Majji AB, Janarthanan M, Naduvilath TJ. Significance of refractive status in branch retinal vein occlusion. A case-control study. *Retina* 1997; 17: 200-4.
13. Koizumi H, Ferrara DC, Bruè C, Spaide RF. Central retinal vein occlusion case – control study. *Amer J Ophthalmol* 2007; 144: 858-63.
14. Sherpa D, Shakya S, Shrestha J.K. Association of primary glaucoma with retinal vein occlusion. *Kathmandu Univ Med J* 2007; 6: 49-54.
15. Călugăru M. The incidence of primary open-angle glaucoma in patients with central retinal vein occlusion. *Oftalmologia* 2000; 52: 22-7.
16. Vessev MP, Hannaford P, Mant J, Painter R, Frith P, Chappel D. Oral contraception and eye disease: findings in two large cohort studies. *Brit J Ophthalmol* 1998; 82: 538-42.
17. Kirwan JF, Tsaloumas MD, Vinall H, Prior P, Kritzing EE, Dodson PM. Sex hormone preparations and retinal vein occlusion: *Eye* 1997; 11: 53-6.
18. Scoditti U, Buccino GP, Pini M, Pattacini C, Mancina D. Risk of acute cerebrovascular events related to low oestrogen oral contraceptive treatment. *Italian J Neurol Sci* 1998; 19:15-9.