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OUTCOME OF INTRAVITREAL BEVACIZUMAB IN MYOPIC CHOROIDAL NEOVASCULARISATION

LALI L K
Department of Ophthalmology, INSTITUTE OF OPHTHALMOLOGY, JOSEPH EYE HOSPITAL

Abstract : AIM - To evaluate the efficacy of intravitreal bevacizumab in the treatment of high myopic choroidal neovascularisation. METHOD - A retrospective study of seven eyes (six patients) with myopic choroidal neovascularisation (CNVM) from January 2013-January 2015. Best- corrected visual acuity (BCVA), fundus photography, fundus fluorescein angiography (FFA) and optical coherence tomography (OCT) were evaluated. Eyes were treated with monthly injections of intravitreal bevacizumab 2.5 mg0.1 ml for 3 months and followed upto 6 months. BCVA and CNVM area were compared before and after treatment. RESULTS - Pre-treatment and post- treatment mean BCVA (decimal values) were 0.08 0.04 and 0.20.1 ,and the mean CNV area decreased from 1351 microns at baseline to 485.5 microns at 3 months. CONCLUSION - Intravitreal bevacizumab seems to be an effective therapeutic procedure to treat extrafoveal and juxtafoveal CNVM in highly myopic eyes.

Keyword : Myopic choroidal neovascularisation, Intravitreal bevacizumab, fluorescein angiography.

INTRODUCTION

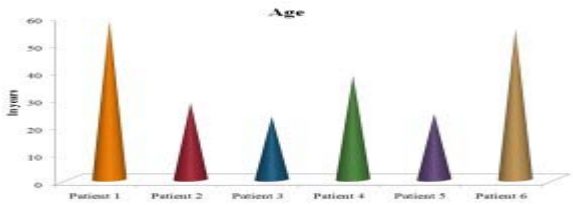
Choroidal neovascularisation (CNV) secondary to pathological myopia is one of the leading causes of irreversible central vision loss in younger patients. The prevalence of pathological myopia is 1-3% in adults and myopic choroidal neovascularisation (CNV) has been shown to develop in 5-11% of eyes with pathological myopia (Wong et al; Am J Ophthalmol 2014) .Myopic CNV has typical characteristics including a small size, a subfoveal, extrafoveal or juxtafoveal location, absence or presence of minimal subretinal fluid and haemorrhage in the background of a tigroid fundus (Wong et al; Br J Ophthalmol 2015). Myopic CNV size and location of CNVM at the macula are identified as a significant prognostic factors. Myopic CNVM is usually small compared with the CNVM occuring in age related macular degeneration, and usually occurs at the lacquer cracks or in areas of patchy chorioretinal atrophy. Early consideration of treatment for myopic CNV is important because it often affects young people and its natural course without treatment is poor. Bevacizumab in a dose of 2.5 mg/ 0.1 ml allows a sufficient therapeutic concentration to be achieved in a large volume of the vitreous chamber in highly myopic eyes. Intravitreal anti-vascular endothelial growth factor (anti- VEGF) injection may be considered as first line of therapy for myopic CNVM. In this paper, an evaluation of the efficacy of intravitreal bevacizumab (IVB) in the treatment of high myopic choroidal neovascularisation in a case series is discussed.

MATERIALS AND METHODS

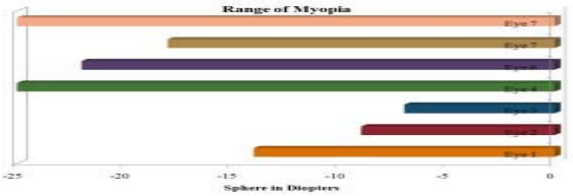
A retrospective study of seven eyes (six patients) with myopic CNVM , who attended the retina clinic from January 2013 to January 2015 was done. Informed consent was obtained from all the patients and the study was approved by the Institutional Ethics committee. Inclusion criteria were patients with myopic refractive error of more than -6.00 Dsph, subfoveal, juxtafoveal or extrafoveal CNV, leakage from the CNV on fluorescein angiography and a minimum follow-up period of 6 months. Exclusion criteria were the presence any ocular diseases other than pathological myopia, previous treatment for CNVM or history of intraocular surgery within 6 months on the study eye. All the patients were evaluated by determining best-corrected visual acuity (BCVA), and by performing fundus photography, fundus fluorescein angiography (FFA) and optical coherence tomography (OCT). Eyes were treated with monthly injections of intravitreal bevacizumab 2.5mg/ 0.1 ml for 3 months and followed upto 6 months. BCVA and CNVM area were compared before and after treatment. Statistical analysis was performed by using Student 't' test.

RESULTS

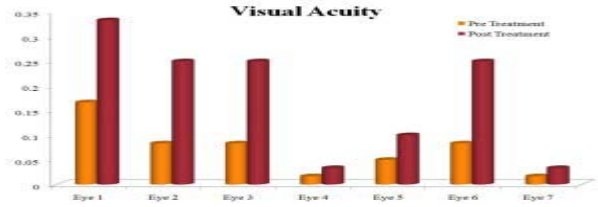
Data on the seven eyes were analysed. The mean age of the six patient was 37.7± 15.6 years. The range of myopia extended from -6 to -25 dioptres. The pre-treatment and post-treatment mean BCVA (decimal values) were 0.08± 0.04 and 0.2±0.1,respectively.The mean CNV area decreased from 1351 microns at baseline to 485.5 microns at 3 months (student 't' test, $p<0.001$). No systemic or ocular complication was noted after treatment.



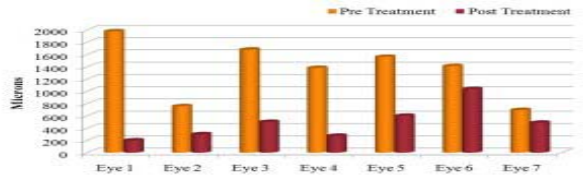
Age



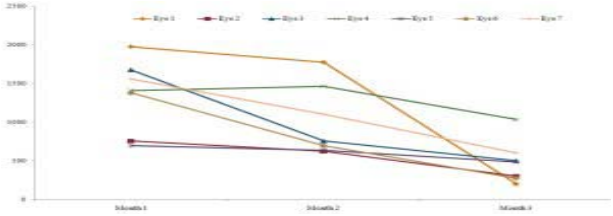
Range of myopia



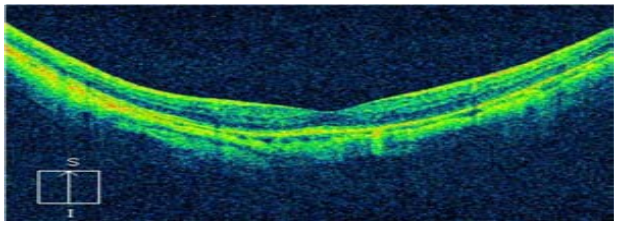
Visual acuity



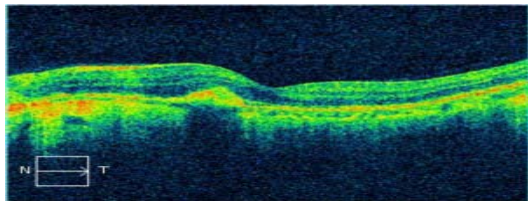
Size of CNVM area



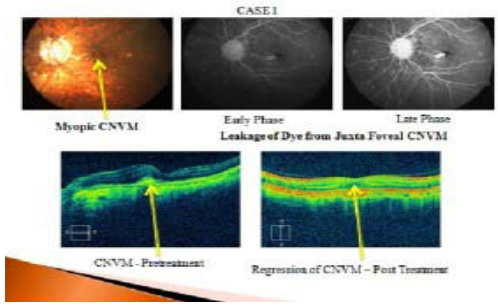
Changes in CNVM area after IVB



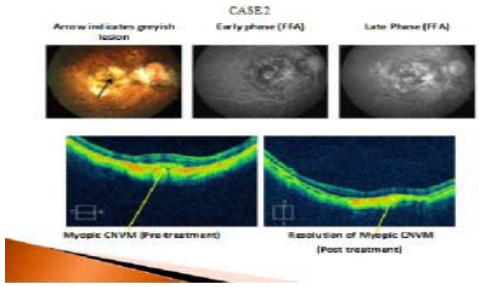
Normal OCT in high myopia



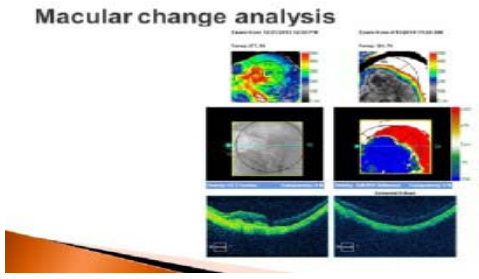
Juxta-foveal myopic CNVM



Case1



Case2



Macular change analysis

DISCUSSION

The diagnosis of myopic CNV can be made out by fundus examination which shows small, flat, greyish membrane with hyperpigmented border if chronic or recurrent with features of degenerative myopia like pale tessellated appearance due to diffuse attenuation of the RPE with visibility of large choroidal vessels, focal chorio retinal atrophy, small or large anomalous tilted disc, peripapillary chorioretinal atrophy, laccquer cracks with ruptures in the RPE-bruch membrane choriocapillaris complex characterised by fine, irregular, yellow lines, often branching and criss-crossing at the posterior pole, lattice degeneration, subretinal haemorrhages and rarely staphyloma. The symptoms of myopic CNV are decrease of vision, central scotoma and metamorphopsia. In fundus

fluoroscein angiography, majority of the patients presents as a 'classic', 'type 2' CNV with well defined hyperfluorescence in the early phase and leakage during late phase, which is smaller with minimal subretinal fluid and an absence of drusen at the typical age of onset. In OCT, patients present with highly reflective area contigous above the RPE with minimal subretinal fluid. Patients with age more than 40 years, subfoveal CNV, size of the lesion more than 400 microns and lower baseline BCVA are associated with poor prognosis.

In a study by Chan et al; 2007, proved that 3 monthly doses of intravitreal bevacizumab injections (1.25 mg in 0.05 ml) were given to 22 eyes , out of these 20 eyes had resolution of CNVM and two eyes had recurrence. In a related study by Chan et al;2009, 29 eyes received intravitreal injections of bevacizumab (1.25 mg/0.05 m)l ; of these, the lesions resolved in 27 eyes while 2 eyes had recurrence. In the current study ,four eyes presented with juxtafoveal CNV and three eyes presented with extrafoveal CNV. Intra vitreal bevacizumab 2.5 mg/0.1 ml were given to seven eyes and all exhibited resolution of CNVM, there was no recurrence even after 6 months.

CONCLUSION

Short-term results suggest that intravitreal bevacizumab is a safe and effective method to stabilize visual acuity, reduce central macular thickness and inhibit progression of myopic CNVM. A protocol involving 3 monthly injections of intravitreal bevacizumab (2.5 mg/ 0.1ml) seems to be superior to a single injection since it helps to consolidate the treatment effect and to minimise the risk of persistence or recurrence of CNV. Therefore, an initial loading dose of intravitreal bevacizumab (2.5 mg/ 0.1ml) injections given once a month for three consecutive months is safe and effective in treating myopic CNVM.

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