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MYOPIC CHOROIDAL NEOVASCULAR MEMBRANE- EFFICACY OF ANTI VASCULAR ENDOTHELIAL GROWTH FACTORS

Ophthalmology

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ABSTRACT

AIMS: To evaluate the efficacy of anti vascular endothelial growth factors (Anti- VEGF) in treatment of myopic choroidal neovascular membranes.

METHODS: A retrospective data analysis of 16 eyes of 16 patients who received Anti-VEGF treatment either Ranibizumab or bevacizumab was done. Cases with at least of one year follow up were included in the study. Best corrected visual acuity was analyzed and was considered as the primary outcome.

RESULTS: Out of 16 patients, 15 patients showed improvement of at 2 lines in best corrected visual acuity on Snellens chart. One patient had loss of vision due to post injection endophthalmitis. The maximum number of injection used was 4 in one patient. Rest all patient needed 3 or less injections in a period of one year.

CONCLUSION: Intravitreal Anti-VEGF is effective in the treatment of myopic CNVM. Moreover fewer injections are needed to maintain the or improve the vision in myopic CNVM.

KEYWORDS

Myopia, Pathological myopia, Myopic CNVM, Ranibizumab, Bevacizumab

INTRODUCTION:

Myopia is a very common refractive error worldwide and specially in Asia. If refractive error is very high (-6.00 D) it is called as pathological myopia and it is associated with scleral, choroidal and retinal degenerative changes. Development ofchoroidal neovascular membrane (CNVM) formation is one the most cause of vision loss in myopes. Myopic CNVM may develop in 5 to 10% people with pathological myopia (1-4). If a patient develops CNVM in one eye, there is 30% chances of development CNVM in the other eye. Optical coherence tomography (OCT) and fluorescein angiography (FFA) has got a very important role in diagnosis as sometimes it can be missed by only clinical examination.

Previously Photodynamic therapy (PDT) with visudyne was the approved treatment but it used to only stabilize the vision and visual improvement was not seen (5).

Recently role of different anti vascular endothelial growth factors (Anti-VEGF) investigated widely in many clinical studies and it has found effective. Anti-VEGF has helped in improving vision in patients of myopic CNVM. Most widely used drugs are Ranibizumab (6) (Lucentis; Novartis Pharma AG, Basel, Switzerland, and Genentech Inc., South San Francisco, CA) and off label Bevacizumab (7-9).

In majority of CNVM, generally multiple intravitreal injections of Anti-VEGF are required but in our experience we have found that myopic CNVM becomes stabilized in lesser injections only.

In this study, a retrospective analysis of data of treated patients were done with at least one year of follow up. We analyzed the improvement in best corrected visual acuity, number of injections required and complications if any occurred due to injections.

METHODS:

Records of patients treated with intravitreal injections of monoclonal antibody were analyzed. Study was carried out between year 2014 to 2016 at Divyadrishti eye centre Patna. Patients with at least one year of follow up were included. All the patients with suspected CNVM, underwent OCT scan and FFA to confirm the diagnosis. Patients received either Ranibizumab (Lucentis; Novartis Pharma AG, Basel, Switzerland, and Genentech Inc., South San Francisco, CA) or Bevacizumab (Roche and Genentech Inc., South San Francisco, CA). Ranibizumab is approved for intravitreal use in myopic CNVM by US FDA and DCG of India. Bevacizumab is used as off label in neovascular diseases of retina all over the world with ample amount of literature available about its safety and efficacy. In many studies both the drugs have been found equally effective in neovascular AMD (10).

Patients were given a choice between the drugs. Injections were given after taking the informed consent and fully explaining the use of Avastine as off label drug. Dilated fundus examination was done in all the patients to look for any peripheral retinal degenerations and lattices were seen in 2 patients. Laser barrage to lattices were done and injection was given 3 weeks after laser. All the injections were given by a trained Vitreo-Retina surgeon under full antiseptic precautions in operation theater. Injections were given under topical anesthesia (eyedrop proparacaine 0.5%) and in inferotemaporal quadrant. Follow were done on day 1, 3 and 30 after injections. Decision to repeat the injections was taken on the basis of clinical examination and OCT scan taken on day 30. From the beginning treatment strategy was PRN (pro-re-nata) basis and no loading dose was given.

Eleven patients received Ranibizumab and 5 bevacizumab at the start of treatment. Choice of injection was based on the patients opting among the two drugs and no preference was offered to them. One patient received bevacizumab after 2 doses ranibizumab with poor response.

RESULTS:

In our study myopia in patients varied from -3.5 D to -21 D. Total 16 patients were recruited in the study. We assessed improvement in visual acuity after one year of treatment.

Table 1. Improvement In Best Corrected Vision On Snellens Chart

Improvement in BCVA	> 4 lines	2 to 4 lines	< 2 lines
No of patients	6	9	1

One patient had loss of vision from 6/60 to no light perception. Rest all patients had at least two lines of improvement.

Table 2. No Of Injections Used

No of injections	1	2	3	4
No of patients	3	8	4	1

One patient developed endophthalmitis after receiving injection Bevacizumab. She was treated with intravitreal injections of antibiotic two doses at an interval of 48 hours. Later on pars plana vitrectomy was done. Culture was positive for Acinatobactor. Patient didn't show any improvement and eye went into phthisis.

Rest all patients in the study group showed at least two lines of improvement.

DISCUSSION:

Pathological myopia is a very common entity all over the world and especially in south east Asia. Development of CNVM in macular area is one of the very common cause of loss of vision. Diagnosis and treatment of myopic CNVM has always remained a challenge. Previously PDT used to be done but it helped only in prevention of loss of vision and visual improvement was not seen. With the use of Anti VEGF drugs in neovascular retinal disorders has opened a whole new treatment option myopic CNVM. Ranibizumab has been approved for intravitreal use in patients of myopic CNVM. Bevacizumab is also being used very commonly as off label drug for myopic CNVM.

But in majority of neovascular retinal disorders multiple injections are required. In neovascular AMD, multiple studies have found that on an average around 9-11 injections are needed in the first year to control the disease. In our experience we have found Anti VEGF is very effective and less injections are needed.

In our study out of 16 patients , 11 patients received Ranibizumab and 5 received Bevacizumab at start of treatment and same drug repeated in the patients if needed except one patient. One patient had poor response to ranibizumab , two monthly injections and hence we switched to bevacizumab for 3rd dose and she responded.

In our study, 3 patients required only one injection and remained stable over a period of one years (table 2). Maximum number of injections required was 4 in one patient. Total 35 injections needed for 16 patients, so average number of injections needed was 2.18 per patient per year.

The visual gain was also significant as all patients (table 1), except one gained at least 2 lines of vision on Snellens visual acuity chart. In 6 patients there was very good improvement of 4 lines. So visual gain after intravitreal AntiVEGF injections is very significant in myopic CNVM.

CONCLUSIONS:

- Myopic CNVM is a common complication leading to loss of vision in myopia.
- Early detection with proper imaging (OCT & FFA) and treatment with Anti-VEGF can have good result.
- Complications like endophthalmitis can have devastating result and should be treated aggressively.

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