INTRAVITREAL BEVACIZUMAB FOR TREATMENT OF CHOROIDAL NEOVASCULARIZATION SECONDARY TO ANGIOID STREAKS

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ABSTRACT: Angioid streaks result from rupture or dehiscence of a calcified and brittle Bruch's membrane between the retinal pigment epithelium and the choroid[2]. Angioid streaks (AS) were first described by Doyne in 1889 and in 1892 Knapp thought that they resembled vessels and used the term 'angioid streaks'[20]. Choroidal neovascularization (CNV) is the major cause of vision loss associated with angioid streaks with an estimated prevalence of between 72% and 86% (Bhatnagar et al. 2007)[18]. The natural history of CNV associated with AS has a poor prognosis, if left untreated.[3-4] We report a case of treatment of CNV in a patient with idiopathic angioid streaks with intravitreal bevacizumab [IVB](Avastin TM, Genentech, South San Francisco, CA, USA) (1.25 mg).
KEY WORDS: Angioid streaks, Choroidal neovascularization, Intravitreal bevacizumab.

CASE REPORT: A 38 yr old female visited to our hospital due to progressive loss of visual acuity in right eye from 1 month .There was no history of any systemic illness or previous ocular trauma. Ocular examination revealed a BCVA of 20/100 in right eye and 20/20 in left eye. Anterior segment was unremarkable. Fundus examination [Fig.1.] showed multiple irregular crack lines radiating outward from the peripapillary areas seen in both eyes suggestive of angioid streaks. In right eye one of these streaks passed through the fovea and was associated with a small, grayish, subfoveal lesion with a surrounding subretinal bleed. Fundus fluorescein angiography [Fig.2.] showed transmission hyperfluorescence corresponding to the linear streaks and an area of expanding hyperfluorescence with late leakage in the juxtafoveal location shown in right eye consistent with CNV. OCT confirmed the presence of sub-retinal fluid (SRF) and type 2 CNV [Fig.3.]. A detailed systemic work up revealed the presence of generalised xerosis, asteatotic eczema and acanthosis nigricans (As suggested by a dermatologist), cardiac examination revealed Mitral valve stenosis. After discussions of the therapeutic options treatment with intravitreal bevacizumab (1.25mg) was initiated. At 6 weeks after intravitreal bevacizumab injection there was improvement in BCVA of 20/50, repeat OCT [Fig.3.] showed absence of sub-retinal fluid and decrease in central macular thickness.

DISCUSSION: Angioid streaks are irregular, radiating, jagged, tapering lines that extend from the peripapillary area into the peripheral fundus that may occur in isolation or as the ocular manifestation of a systemic disease[1]. Angioid streaks may be idiopathic, but are associated with systemic diseases in about half of the patients, such as Paget's disease, pseudoxanthoma elasticum, Ehlers-Danlos syndrome or sickle cell anemia [2] etc. Choroidal neovascularization (CNV) is the major cause of vision loss associated with angioid streaks. CNV occurs in 72% to 86% of eyes with angioid streaks, is often bilateral, and has poor prognosis if left untreated [3-5].

Treatment of neovascular membranes represents a major challenge. Extrafoveal and juxtafoveal lesions have traditionally been treated with laser photocoagulation (Wiegand et al. 2009), but a drop in visual acuity with enlargement of laser induced scar and high rates of recurrence have been reported[6,7].

Results of PDT for subfoveal CNV were also disappointing. Despite a short-term stabilization of visual acuity (Menchini et al. 2004; Browning et al. 2005) [10], the 2-year extension of the study by Browning et al. (2007) showed a progressive vision loss [8,9] . In addition, there is evidence that most treated eyes develop large fibrosis leading to a disciform scar (Shaikh et al. 2003)[11] . One more risk with the PDT is increased chances of retinal & subretinal haemorrhage[11]. The increased subretinal haemorrhage was observed 2 months after PDT and it persisted for 20 months[11]. Recently, histological damage to choriocapillary endothelial cells was found in eyes treated with PDT[13].The structural,[14]angiographic,[13] and biological effects[13] induced by verteporfin therapy may cause increased subretinal haemorrhage after treatment.

Other therapies such as Indocyanine green mediated photothrombosis (IMP)[16] and transpupillary thermotherapy[15] have recently been proposed as alternative treatments for CNV associated with age related macular degeneration(AMD) and others types of CNV but they do not appear to change the course of the disease in AS and the visual prognosis is poor.

Recently, intravitreally administrated bevacizumab , a vascular endothelial growth factor (VEGF) inhibitor that is a full size antibody to all isoforms of VEGF-A, has been successfully used as an off label treatment on CNV secondary to angioid streaks [1,17]. However, the current medical literature encompasses only few case reports of CNV associated with AS treated with bevacizumab(Bhatnagar et al.2007;Apte 2008). Derriman et al. (2008)[19] reported stability of VA for 6 months after three intravitreal injections of bevacizumab(1.25 mg) spaced at monthly intervals. Given the location of CNVM, IVB represents a possible treatment option in our patient and who responded satisfactorily, Although given the diverse outcome in various publications, long term studies are necessary to clarify the real potential of IVB in these patients.

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Fig 1. RE: Baseline colour photograph shows angioid streaks (AS) with grayish lesion with subretinal haemorrhage nasally to the fovea suggestive of choroidal neovascularization (CNV).

Fig 2. LE: Baseline colour photograph shows angioid streaks (AS).

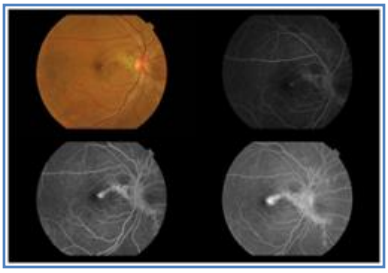

Fig 3. RE: Fluorescein angiography (FA) shows staining of the AS radiating from the optic nerve with evidence of active CNV nasally to the fovea with late leakage.

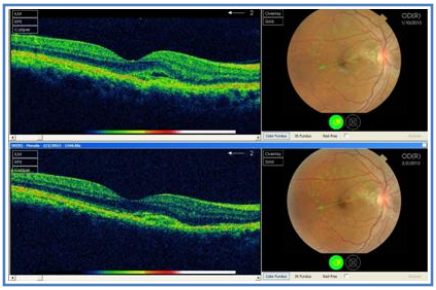

Fig 4. Above: Optical coherence tomography showing a hyperreflective subfoveal choroidal neovascular membrane with presence of sub-retinal fluid (SRF).

Below: At 6 weeks after intravitreal bevacizumab injection showing absence of sub-retinal fluid and decrease in central macular thickness.

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