Case report:Intravitreal Conbercept for treatment of choroidal neovascularisation secondary to choriodal osteoma

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Case report

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Abstract

Background: Choriodal osteoma is a rare condition. Although anti-VEGF treatment has been reported to be effective in managing choroidal neovascularisation secondary to choriodal osteoma, to the best of our knowledge, this is the first report of using conbercept in such condition. Case presentation:This report describes a case of choroidal neovascularisation secondary to choriodal osteoma. A 37-year old female presented with decreased vision and distortion in left eye. Fundus image revealed an orange-yellow lesion with clear boundary in the macular area. Fluorescein angiography indicated choroidal neovascularization(CNV). OCT, B-scan and CT scan showed features of choroidal osteoma. Intravitreal Conbercept was given for four times over a period of 10 months, resulting stability of visual acuity and regression of CNV. Conclusions:Intravitreal Conbercept can be an effective modality in short term in controlling choroidal neovascularisation secondary to choriodal osteoma.

Background

Choroidal osteoma is a rare, benign tumor which appears as well-defined, orange-red or yellowish subretinal mass. It mainly affects young females. Choroidal osteoma could grow slowly with time. More than half of the patients encounter visual loss.[1-3] Over one third of the patients will develop choroidal neovascularisation(CNV).[4] CNV secondary to choroidal osteoma used to be treated using focal laser, transpupillary thermotherapy(TTT),[5] and photodynamic therapy(PDT).[4] In recent years, anti-vascular endothelial growth factor(anti-VEGF) therapy has been reported to treat CNV secondary to choroidal osteoma, including Bevacizumab, Ranibizumab and Aflibercept. [7-19] Results showed that Anti-VEGF agents either monoclonal antibody or fusion protein was effective in managing CNV secondary to choroidal osteoma. A new member of fusion protein - Conbercept has been widely used in China[21] and proven to be effective in managing similar indications as other Anti-VEGF agents, including wet AMD, CNV, PCV and macular edema.[22-24] Compared to Aflibercept, Conbercept has wider mechanism of action.[21] Based on the pharmacological characteristic of Conbercept, we used it to treat one case of CNV secondary to choroidal osteoma and reported it as below.

Case Presentation

A healthy 37 years old female presented with decreased vision and distortion in left eye for over a month in the retina clinic of The 2nd People's Hospital of Yunnan Province, P.R.China. Best corrected visual acuity(BCVA) was 20/20 in the right eye and 20/33 in the left eye. Past systemic and ocular history was negative. Family history was negative. Clinical examination found the right eye was normal and an orange-yellow lesion with clear boundary in the posterior pole and sub-retinal haemorrhage on the macular in the left eye(Fig 1). Ultrasound B-scan showed a slightly elevated, high acoustic reflective choroidal mass with shadowing behind(Fig 1). Fundus fluorescein angiography (FFA) showed dot-like hyperfluoresence in the choroidal lesion,blocked fluoresceince due to sub-retinal hemorrhage and leakage of choriodal neovascularization(Fig 2). Optical coherence tomography(OCT) indicated sub-retinal fluid,

CNV and choroid elevation(Fig 2). CT scan showed a high intensity lesion in the left eye with the size of 0.6×0.3cm(Fig 1). A diagnosis of CNV secondary to choroidal osteoma was made. After informed written consent was achieved, 0.5mg/0.05ml intravitreal Conbercept (KangHong Tnc, China) injection was given to the left eye. A total of four injections were given during a period of 10 months, at intervals ranging from 1-3 months to treat the sub-retinal fluid. One month follow-up after the first injection, the BCVA was improved to 20/25 in the left eye and kept stable afterwards. OCT scan showed the sub-retinal fluid decreased and CNV regressed with time after injections(Fig 2). FFA indicated the fully regression of CNV at 6 months after presentation(Fig 2). At the last visit, the BCVA was 20/25 in the left eye. The fundus photography showed the choroidal lesion with fully absorption of sub-retinal hemorrhage(Fig 1). OCT scan revealed some sub-retinal fluid(Fig 2). The patient decided not to get further injection due to asymptomatic feeling.

Discussion And Conclusions

Choriodal osteoma is a rare, slow growing benign tumor. It occurs in all races, however the frequency and exact etiology are unclear. It is commonly found in young females and is unilateral in 80% of cases. The visual prognosis could be poor and is related to multiple factors, such as the tumor location, decalcification status, RPE damage, presence of CNV, sub-retinal fluid and sub-retinal hemorrhages.[2,3]

Management of CNV secondary to choroidal osteomas is critical to patients' vision. Various attempts to treat CNV secondary to choroidal osteomas have been reported in the literature, including laser photocoagulation(argon laser, TTT and PDT), surgical removal of CNV, and anti-VEGF therapy. The results from laser photocoagulation and surgical removal of CNV were discouraged.and have relation to poor visual outcomes.[3,5,6,7] Anti-VEGF therapy has been used as the first-line option in CNV related pathology, such as age-related macular degeneration, idiopathic CNV, pathological myopia, etc. Bevacizumab and Ranibizumab have been reported to treat CNV associated with choriodal osteoma effectively.[8-15] However, a long term observation showed that IVB for subfoveal CNV with a decalcified choroidal osteoma may have a limited role.[16] VEGF Trap (aflibercept) is a soluble decoy receptor generated with Trap technology. The main structure of Aflibercept is fusion of the second domain of VEGFRs 1 and the third domain of VEGFR 2 to the Fc portion of human IgG1. It targets VEGF-A, VEGF-B and PlGF.[17] Intravitreal aflibercept has been reported to use as rescue therapy for non-responder to bevacizumab and ranibizumab[18] and combined treatment with yellow laser[19] for choroidal neovascularization secondary to choriodal osteoma. A recombinant fusion protein-Conbercept is a novel anti-VEGF drug which was invented and widely used in China.The second Ig domain of VEGFR1 and the third and fourth Ig domain of VEGFR2 to the constant region (Fc) of human IgG1 are the main structure of Conbercept,[20] which works as a receptor decoy for VEGF A, VEGF B, VEGF C and PlGF.[21] Theoritically, Conbercept has wider mechanism of action than another fusion protein member-Aflibercept. It has been proven to be helpful in managing different retinal neovascular diseases.[22-24] Literatures revealed the success of Anti-VEGF agents in treating CNV secondary to choroidal osteomas, in particular the use of Aflibercept in non-responder to bevacizumab and ranibizumab. Considering the similarity in

pharmacological characteristics between Conbercept and Aflibercept, we decided to give Conbercept injection intravitreally to our case- a young female with CNV secondary to unilateral choroidal osteomas. After a total of 4 injections of intravitreal Conbercept over a period of 10 months, the response to treatment is inspiring and leads to subjective and anatomical improvement. BCVA was improved and stabilized to 20/25, the resolving of sub-retinal fluid and regression of CNV were achieved. Intravitreal injection of Anti-VEGF agents related to various complications, including tractional retinal detachment, RPE tear, endophthalmitis, intraocular inflammation, Rhegmatogenous retinal detachment, intraocular pressure elevation, ocular hemorrhage, etc.[25] The incidence rate of RPE tear after intravitreal injection of Anti-VEGF ranged from 0.06 to 27%. It is believed that pre-existing RPE detachment or fibrovascular PED is the major risk factor for RPE tear.[26] In our case, no complication of injection occurred during the follow-up period. Although severe complication has not been reported in literatures of Anti-VEGF injection in treating CNV secondary to unilateral choroidal osteomas, we still need to be aware of the risk of complications and follow up closely.

In conclusion, Intravitreal injection of the new anti-VEGF agent-Conbercept is effective in improving visual outcome and resolving CNV, sub-retinal fluid and hemorrhages associated with choroidal osteoma in short term.

List Of Abbreviations

CNV choroidal neovascularization

BCVA Best corrected visual acuity

OCT Optical coherence tomography

FFA Fundus fluorescein angiography

TTT transpupillary thermotherapy

PDT Photodynamic therapy

PCV Polypoidal Choroidal Vasculopathy

PED Pigment epithelium detachment

RPE Retinal pigment epithelium

IVB Intravitreal Bevacizumab

Declarations

Ethic approval and consent to participate

This study adheres to the tenets of the Declaration of Helsinki and was approved by the the Ethical Committee of The 2nd People's Hospital of Yunnan Province, China.

Consent for publication

The patient gave written consent to participate in this study and for publication of the data and the images obtained from the patient.

Availability of data and materials

Not applicable.

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Competing interests

The author has no financial and non-financial competing interests.

Authors' Contributions

Wu M carried out the case collection and manuscript preparation.

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Figures

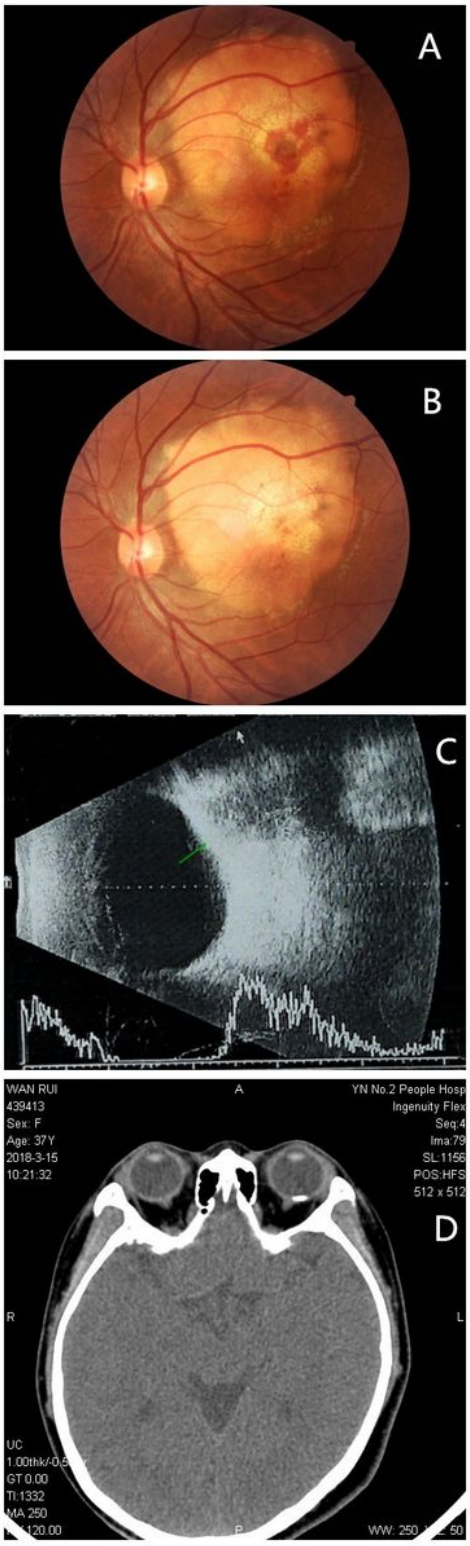

Figure 1

Fundus image, ultrasound B scan and CT scan. 1A. Fundus image of the left eye at baseline; 1B. Fundus image of the left eye at the last follow-up, showing the choroidal lesion with fully absorption of sub-retinal hemorrhage. 1C. B-scan Ultrasonography of the left eye, showing a highly reflective choroidal lesion in the posterior pole(red arrow). 1D. CT scan showing a high density lesion of 0.6*0.3cm size in the posterior pole of the left eye.

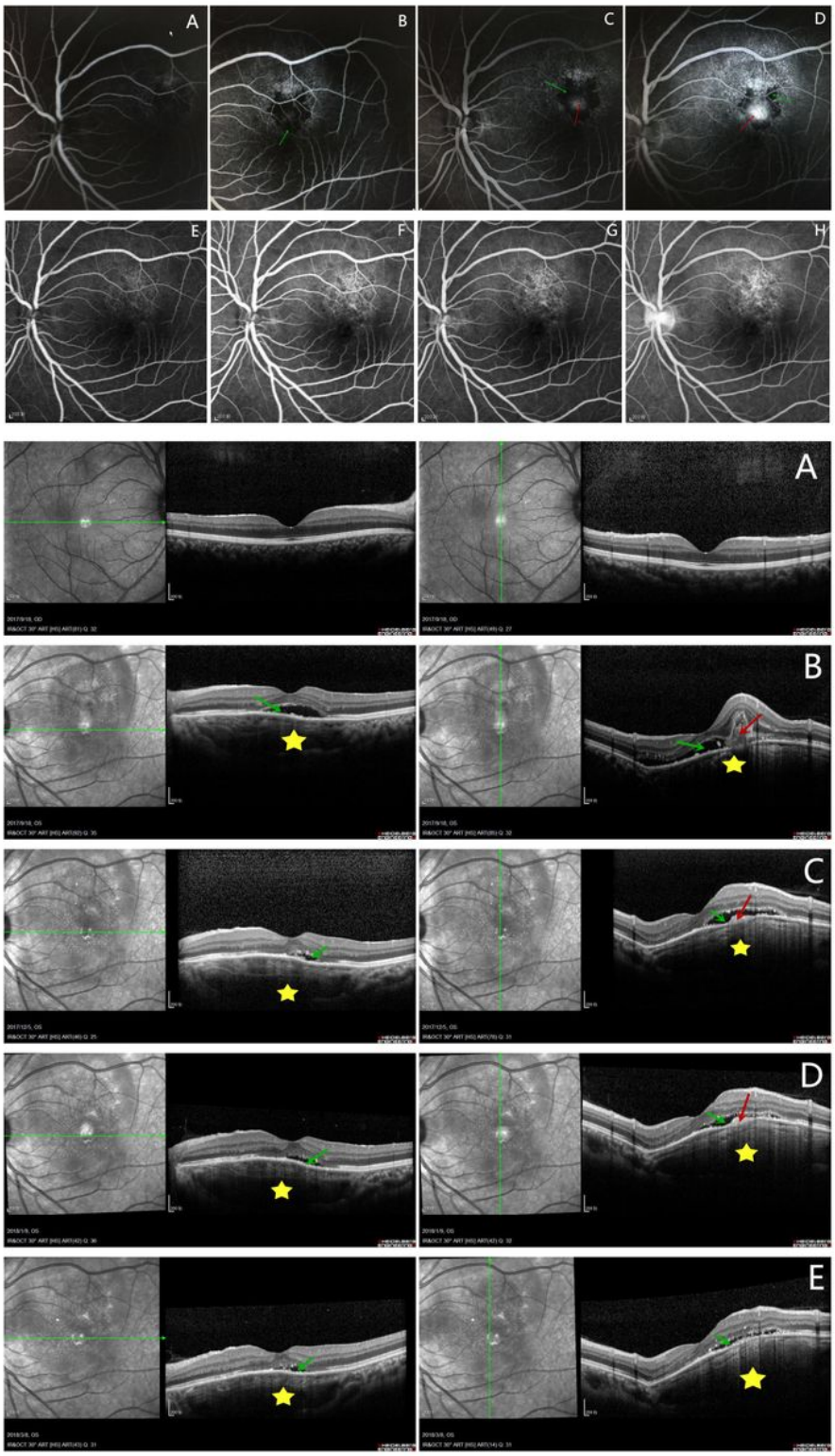

Figure 2

Fundus fluorescein angiography and Optical coherence tomography of the left eye. 3A-3D: Fundus fluorescein angiography of the left eye at baseline, showing blocked fluoresceince due to sub-retinal hemorrhage(green arrow) and leakage of choriodal neovascularization(red arrow); SE-3H: Fundus fluorescein angiography of the left eye at 6 months after presentation, showing absorption of sub-retinal hemorrhage and fully regression of CNV. 3A. 0:20.46; 3B. 0:34.34; 3C. 4:09.98; 3D. 11:15.18; 3E. 0:22.92;

3F. 1:03.90; 3G. 2:30.60; 3H. 8:14.15. OCT A. Right eye is normal at baseline. OCT B. At baseline, OCT image of the left eye, showing an irregular hyper-reflectivity of the lesion(yellow star), CNV(red arrow) and sub-retinal fluid(green arrow). OCT C. OCT image of the left eye at one month after the first injection, showing an irregular hyper-reflectivity of the lesion(yellow star), shrunken CNV(red arrow) and diminished sub-retinal fluid(green arrow). OCT D. OCT image of the left eye at one month after the third injection, showing an irregular hyper-reflectivity of the lesion(yellow star), shrunken CNV(red arrow) and diminished sub-retinal fluid(green arrow). OCT E. OCT image of the left eye at the last visit, showing an irregular hyper-reflectivity of the lesion(yellow star), diminished sub-retinal fluid(green arrow). There is no evidence of CNV.

Supplementary Files

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