بسم اللـــه الرحمن الرحيم

"وَاتَّقُوا اللَّهَ وَيُعَلِّمُكُمُ اللَّهُ وَاللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ"

البقرة:282

Role of Bevacizumab (Avastin) in Anterior segment of the eye

Essay

Submitted for Partial Fulfillment of Master Degree (M.Sc) in Ophthalmology

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توطئة للحصول على درجة الماجستير

فى طب وجراحة العيون

مقدمة من

الطبيبة / جيهان السيد العصفورى

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Introduction

Role of Bevacizumab (Avastin) in Anterior segment of the eye

Protocol

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Introduction

Angiogenesis, the formation of neo-vessels, is a physiological event but is involved in various pathological conditions including cancers. Thus, the establishment of effective anti-angiogenic treatment has long been a goal.**(1)**

Bevacizumab (Avastin) is a humanized monoclonal antibody against vascular endothelial growth factor(VEGF) that was the first Food and Drug Administration (FDA) approved therapy designed to inhibit angiogenesis.**(2)**

At present ,it can be used for inhibition of tumor angiogenesis, So it was the first antiangiogenic agent to be approved for advanced non-small cell lung cancer, breast cancer and colorectal cancer.**(3)**

Many diseases of the eye,such as age-related macular degeneration(AMD)and diabetic retinopathy damage the retina and may cause blindness when blood vessels around the retina grow abnormally and leak fluid.This abnormal growth is caused by VEGF,so Bevacizumab has been successfully used to inhibit VEGF and slow this growth.**(4)**

Recently, use of Bevacizumab in anterior segment of the eye found to improve the management of neovascular diseases affecting cornea,conjunctiva and in the anterior chamber of the eye which can be used as anti-angiogenic drug to inhibit iris neovascularization.**(4)**

Bevacizumab eye drops inhibit corneal neovascularization, and lead to a reduction of the vessel diameter. Koenig Y et al, 2009, suggest that off-label use of Bevacizumab eye drops is a relatively safe and well-tolerated option for the treatment of corneal neovascularization.But care should be taken in patients with epithelial defects and neurotrophic keratopathy.**(5)**

Topical bevacizumab is effective in improving comfort and inducing regression of ocular surface neovascularization, conjunctival injection, and corneal opacification in patients with ocular surface disease caused by Stevens-Johnson syndrome **(6)**, and may be a valid complementary treatment in patients with corneal neovascularization caused by herpetic stromal keratitis.**(7)**

Topical neutralization of VEGF at the corneal surface does not have significant side effects on normal corneal epithelial wound healing, normal corneal integrity, or normal nerve fiber density. Therefore, anti VEGF eyedrops seem to be a relatively safe option to treat corneal neovascularization.**(8)**

Pterygium is afibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbus onto the cornea.**(9)**Treatment of primary pterygium with subconjunctival bevacizumab results in a short-term decrease in vascularization and irritation. Further long-term studies should investigate the efficacy of bevacizumab as an adjunct to surgical excision or combined topical treatment targeting other growth factors involved in pterygium pathogenesis.**(10)**

Off-label short-term use of topical bevacizumab may be effective to prevent recurrence in a patient with impending recurrent pterygium.**(11)**

As neovascularization is an ischaemic complication of diabetes which results in growth of blood vessels on the iris surface and angle of anterior chamber,value of intracameral bevacizumab as an adjunctive treatment for iris neovascularization was also evaluated.**(12)**

Intracameral bevacizumab injection can remarkably reduce iris neovascularization in neovascular glaucoma patients. Lim TH et al, 2009,find that VEGF levels were significantly decreased two weeks after injection and corneal toxicity was not observed during short term follow-up.**(13)** So it seems to be safe for corneal endothelial cells.**(14)**