BEVACIZUMAB FOR
i) AGE-RELATED MACULAR DEGENERATION
ii) DIABETIC RETINOPATHY

Executive Summary

[Adapted from the report by DR. IZZUNA MUDLA MOHAMED GHAZALI]

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Background

Age-related macular degeneration (AMD) is a disease associated with aging that gradually destroys sharp, central vision. It is the leading cause of vision loss for people over the age of 50 in the western world, affecting approximately 25-30 million people.

Diabetic retinopathy (DR) is the major blinding ocular complication of diabetes mellitus (DM). The overall prevalence of diabetic retinopathy varies in different population. Among Malaysians diagnosed to have DM before the age of 40 years, the prevalence of DR was 12.3% in type 1 and 22.3% in type 2 DM, while the prevalence of proliferative DR was 4.0% in type 1 and 9.3% in type 2 DM.

The prevalence of AMD and diabetic retinopathy is expected to increase with the increasing aging population and prevalence of diabetes in Malaysia.

This assessment was requested by a Senior Consultant Ophthalmologist who was also the Head of Ophthalmology Service, Ministry of Health Malaysia then to improve equity and access to appropriate care for these patients by exploring into the use of a cheaper alternative to currently available anti-Vascular Endothelial Growth Factor (VEGF) approved for intraocular use.

Technical Features

Bevacizumab (Avastin®, Genentech) is a monoclonal antibody that binds and inhibits all isoforms of VEGF. It was approved by the US Food and Drug Administration (FDA) in 2004 for metastatic colorectal cancer and later approved for non-squamous non-small cell lung cancer and advanced HER-2 negative breast cancer. It is not yet approved for intraocular use. However, as cost is a factor, bevacizumab has been used off-label for intraocular diseases by many ophthalmologists worldwide.

Policy Question

Should anti-VEGF such as bevacizumab be made available at selected Ministry of Health Malaysia hospitals for the treatment of AMD and DR?

Objective

To undertake a systematic review on the effectiveness, safety and cost-effectiveness of bevacizumab in the treatment of AMD and DR.

Methods

Electronic databases were searched for published literatures on intravitreal bevacizumab usage for the treatment of AMD and DR. The following databases were searched including MEDLINE, PubMed, EBM Reviews – Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, HTA Databases, EBM Reviews - NHS Economic Evaluation Database and DARE. Additional articles were identified by reviewing the bibliographies of retrieved articles and handsearching of journals. Further information was sought from unpublished report. The search was limited to human study only. The quality of the papers was assessed using Critical Appraisal Skills Programme (CASP) checklists and evidence was graded according to US/Canadian Preventive Services Task Force Levels of Evidence.

Result and conclusion

Twenty full-text articles were included. The evidence suggests that bevacizumab was more effective compared to other treatment modalities for AMD, but the evidence was only of poor to fair quality and the studies were of short duration.

There was fair evidence to support that bevacizumab was more effective compared to verteporfin photodynamic therapy for patients with minimally classic or occult choroidal neovascularisation due to AMD. There were two studies that compared bevacizumab and ranibizumab for age-related macular degeneration but both studies were non-randomised and one of the studies was retrospective.

There was poor to good quality of evidence retrieved on the effectiveness / efficacy of bevacizumab for DR. There was good evidence to show that bevacizumab was more effective in patients with clinically significant diabetic macular edema compared to macular photocoagulation or combined therapy with intravitreal triamcinolone. There was good evidence to show that bevacizumab treatment given after phacoemulsification and intraocular lens implantation reduced DR progression. There was fair evidence to suggest that preoperative treatment with bevacizumab for patients undergoing pars plana vitrectomy was beneficial.

There was evidence to show that bevacizumab was more cost-effective compared to other treatment modalities for the management of AMD. There was no evidence on cost-effectiveness of bevacizumab for DR.

There was evidence to support the safety of bevacizumab for the management of AMD and DR; however caution should be taken in high risk patients.

Recommendation

Based on this review, intraocular bevacizumab can be used selectively in patients with predominantly classic, minimally classic or occult choroidal neovascularisation due to AMD and patients diabetic macular edema. However, caution needs to be taken for high risk patients with a history of ischaemic heart disease or thrombo-embolic events. For other indications such as proliferative DR, more clinical research is warranted. Effort should be made to register this drug for intraocular use.