

Research Article

Indications for intravitreal anti vascular endothelial growth factor in Kano, North Western, Nigeria

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ABSTRACT

Background: To review the common indications for intravitreal anti vascular endothelial growth factor (VEGF) medications given at the retinal unit of Makkah Specialist Eye Hospital, Kano, Nigeria from January 2014 to December 2015.

Methods: The case records of all patients given intravitreal anti VEGF medications were reviewed and age, diagnosis and indication for injection were recorded. Results were analyzed using the PAWS statistics version 18.0 (SPSS Inc., Chicago, IL).

Results: A total of 174 injections consisting of 170 bevacizumab and 4 ranibizumab injections were given in the study period. The common indications for intravitreal injections were diabetic macula edema (42.5%), retinal vein occlusion (25.9%) and vitreous hemorrhage (9.8%).

Conclusions: Diabetic macula edema and retinal vein occlusions are the major indications for intravitreal anti VEGF injections in Kano.

Keywords: Diabetic macula edema, Retinal vein occlusion, Intravitreal anti VEGF

INTRODUCTION

Anti-vascular endothelial growth factor (anti VEGF) drugs have over the years grown to become a very important class of medication used by the ophthalmologist. The list of its indication continues to grow, nowhere more than in the retina subspecialty. VEGF plays a role in endothelial cell proliferation and vascular permeability and has been implicated in retinal diseases like retinal vein occlusions, diabetic retinopathy, wet age related macula degeneration and retinopathy of prematurity (ROP).¹

The currently available anti VEGF agents include bevacizumab (avastin), ranibizumab (lucentis) and aflibercept (eyelea). bevacizumab and ranibizumab are currently available in our centre while aflibercept is not.

Even though bevacizumab is used off label, it is the more commonly used in our setting as a result of its lower cost compared to ranibizumab and the CATT trial also found it to be non-inferior to ranibizumab in terms of efficacy.²

METHODS

A review of case records of patients attending the retinal clinic who had intravitreal anti VEGF injections during the study period (Jan 2014 to Dec 2015) was performed. Demographic data, indication, number of and type of injection were recorded.

All intravitreal injections were performed in the operating theatre under strict aseptic conditions. The periorbital area around the eye is painted with 10% povidone iodine while a 5% concentration is instilled in the conjunctival

sac and flushed with saline after 2 minutes. 0.5% tetracaine hydrochloride is instilled in eye and 1.25 mg of bevacizumab or 0.5 mg of ranibizumab in 0.05 ml is injected 3.5 to 4 mm behind the limbus. Patient is placed on topical antibiotics for at least 72 hours following the procedure and reviewed at one day, one week and four weeks.

RESULTS

A total of one hundred and seventy four (174) intravitreal anti VEGF injections were given consisting of 170 bevacizumab and 4 ranibizumab injections. The most common indication was diabetic macular edema (DME) followed by retinal vein occlusions (RVO) and vitreous haemorrhage. The results are shown in Table 1.

Table 1: Indications for intravitreal anti VEGF in Kano, Northwestern Nigeria.

Indication/age (years)	<30	31-40	41-50	51-60	>60	Total (%)
Diabetic macular edema	2	10	25	25	12	74 (42.5%)
Retinal vein occlusion	-	4	14	17	10	45 (25.9%)
Pre-operative	-	1	3	7	3	14 (8%)
Age related macula degeneration	-	-	-	6	8	14 (8%)
Proliferative diabetic retinopathy	1	-	2	-	1	4 (2.3%)
Vitreous haemorrhage	2	2	7	1	5	17 (9.8%)
Cystoid macula edema	2	1	-	-	1	4 (2.3%)
CNVM	1	-	-	-	-	1 (0.6%)
Neovascular glaucoma	-	1	-	-	-	1 (0.6%)
Total	8	19	51	56	40	174 (100%)

DISCUSSION

The most common indication for intravitreal anti VEGF in Kano was diabetic macula edema. This could be attributed to the predicted explosion in the number of individuals with diabetes mellitus with the greatest relative increase in Sub Saharan Africa, Middle East and India.³ Also the Nigerian national blindness and visual impairment study conducted between 2005 to 2007 showed prevalence of diabetic retinopathy (DR) prevalence of 20.5% of which 51.4% had diabetic macula edema.⁴ Various studies including RESOLVE, RESTORE and BOLT have demonstrated the effectiveness of anti VEGF therapy either alone or in combination with laser in the management of DME.⁵⁻⁷ Retinal vein occlusions (RVO) which consists of central and branch retinal vein occlusions were the second commonest indication for intravitreal anti VEGF injections accounting for about a quarter. In a study carried out in Ibadan, Southwestern Nigeria, RVO was the commonest indication for intravitreal bevacizumab and this was attributed to the high prevalence of systemic hypertension which is a known risk factor, among Nigerians.⁸ Studies which include Bravo, Cruise and others have demonstrated the effectiveness of ranibizumab and bevacizumab in the management of branch and central retinal vein occlusions vitreous haemorrhage from retinal neovascularization which is seen in diseases like proliferative diabetic retinopathy and proliferative sickle cell retinopathy were seen.^{9,10} Intravitreal anti VEGF are useful in clearing the haemorrhage in order to allow for adequate view of the retina for delivery of laser therapy. Age related macula

degeneration (ARMD) which is the commonest indication for intravitreal anti VEGF in the western world, was lower down our list of indications though it was the second common indication in Ibadan, Southwest Nigeria.⁸

Other indications in this study include preoperative administration 48-72 hours before pars plana vitrectomy surgery in patients with advanced diabetic disease to reduce intraoperative bleeding.

A few cases of neovascular glaucoma and idiopathic choroidal neovascular membrane (CNVM) which have been reported to respond to anti VEGF agents were also seen.¹²

Intravitreal anti VEGF drugs have assumed prominence in the treatment of retinal diseases in Nigeria. Challenges in procurement of these drugs include the high cost of ranibizumab which is available as a single dose injection being beyond the reach of average patients. Bevacizumab is available in a 4 ml vial which contains multiple doses hence need to pool patients for injection in order to reduce the cost per patient. An alternative is for the hospital pharmacy to produce aliquots of single dose injections though this option would likely increase the risk of endophthalmitis.

CONCLUSION

Diabetic macula edema, retinal vein occlusion and vitreous haemorrhage are the most common indications for intravitreal anti VEGF in Kano, Nigeria.

There are challenges with regards dispensing bevacizumab while the high cost of ranibizumab limits its use in developing countries.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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