MEDICAL CHANNEL

Original Article

SHORT TERM COMPLICATIONS OF INTRAVITREAL INJECTION OF BEVACIZUMAB.

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ABSTRACT

Objective: To evaluate the rate of complications after intravitreal injection of Bevacizumab(Avastin).
Design: Hospital Based Multicentre Prospective Study.
Place: Ophthalmology Department People,s University of Medical & Health Sciences Nawabshah(SBA) and Shaheed Mohtarma Banazeer Bhutto Medical University Larkana.
Duration: Two years period from August 2008 to August 2010
Materials and Methods: The clinical interventional case-series study included 200 intravitreal injections of about 1.25mg bevacizumab, performed in the period from August 2008 to August 2010 by four surgeons at Department of Ophthalmology, Peoples Medical University & Health Science College Nawabshah(SBA) and Shaheed Mohtarma Benazir Bhutto Medical University for patients who were diagnosed to have macular oedema or retinal neovascular disease . Patients were followed for 3 months after injectin.
Results: Painless vitreous haze was observed in one eye (1/200 or 0.5%) from the bevacizumab injection , Chemosis in 2 cases (2/200 or 1%) and one eye (1/200 or 0.5%) showed rapidly progressive lenticular changes. The total rate of these complicatios was 4/200 (2.00%).
Conclusion: Our study shows that the beneficial effectiveness of the drug overwhelms the adverse effects, which are themselves unrelated to the chemical composition of Bevacizumab(Avastin).

Keyword:Bevacizumab,intravitreal injection,Vitreous haze

INTRODUCTION.

Bevacizumab is a humanized monoclonal antibody that recognizes and blocks vascular endothelial growth factor A (VEGF-A). VEGF-A is a chemical signal that stimulates the growth of new blood vessels (angiogenesis).
It was in 2005 when Bevacizumab was for the first time used in the treatment of ocular disorders like choroidal neovascularization. Nowadays intravitreal Bevacizumab is used to treat following disorders:

1- CNV caused by Age related Macular Degeneration[1]
2- Retinal vein occlusion[2]
3- Proliferative diabetic retinopathy[3]
4- Iris neovascularization with Proliferative diabetic retinopathy[4]
5- CNV caused by pathological myopia[5]
Idiopathic CNV[6]

Regarding the safety use of intravitrel injection of Bevacizumab many studies have been done and still other are under progress to determine the effectiveness versus complications of this Drug. Ocular adverse effects like chemosis, corneal abrasion, inflammation ,Cataract formation, Retinal pigment epithelial tear and Endophthalmitis after intravitreal injections of bevacizumab[3,8,7,9,10,11] have been reported but the frequency rate of these adverse effects is so low that the benefits overwhelmns them.

MATERIALS AND METHODS

The Study was carried out at the Department of Ophthalmology Peoples university of Medical & health sciences (PUMHS) Nawabshah(SBA) and ophthalmolgy department Shaheed Mohtarma Banazir Bhutto Medical University (SMBBMU) larkana.Patients for this interventional study were selected from out patient department.Before disinfecting with povidone iodine, topical propracaine 0.5%was applied to anesthesize the eye.After applying opsite 1.5mg of Bevacizumab was injected intravitreal via 29,30 g needle.Pressure was applied at injection site to avoid reflux. Single dose two hundred intravitreal injections of about 1.5mg bevacizumab in 200 eyes were given in the period from August 2008 to August 2010 by four surgeons.There were 120 male and 80 female patients with the age ranging from 20 to 70 years. Patients having choroidal neovascularization and Macular edema due to several causes were included in this study. Only those patients were excluded from the study who did not gave consent for the injection and who rejected to comply for the follow up visits. . Patients were followed at first week and than fortnightly for three months.The examination at each follow up was done to measure visual acuity, intraocular pressure, detailed anterior segment and fundus examination.

RESULTS

A total of 200 eyes of 200 patients with various intraocular edematous and neovascular diseases (Table 1) given single dose of intravitreal Bevacizumab were evaluated.

Out of 200 patients 2 developed Conjunctival Chemosis (1%), one patient developed traumatic cataract (0.5%)and one developed vitreous haze (0.5%).Chemosis was of early onset and subsided soon, Cataract was of iatrogenic trauma origin and treated successfully with Phacoemulsifiaction.The painless vitreous clouding subsided after intensified topical antibiotic therapy (Table 2).

Table 1
PATIENTS TREATED WITH BEVACIZUMAB

Indication for Inj.	No. of Pt.
Wet AMD	15
CRVO	40
Diabetic Macular edema	49
Proliferative Diabetic Ret.	53
NVG	31
CNV in Pathologic Myopia	08
CNV Idiopathic	04

Table 2
POST INTRAVITRAEAL INJECTION

Name of Complication	No. of Pt.s
Chemosis	2(1.0%)
Corneal abrasion	0
Cataract	1(0.5%)
Uveitis	0
RPE Detachment	0
Raised IOP	0
Vitreous haze	1(0.5%)

DISCUSSION

Ischemic diseases of eye like central retinal vein occlusion and diabetic or hypertensive retinopathy causes microangiopathies at tissue level. The resultant hypoxia leads to release of vascular endothelial growth factor(VEGF)[12] . VEGF has dual actions, one it causes neovessels formation other it increases vascular permeability which leads to retinal edema[13] Bevacizumab is a monoclonal antibody that was first used in the treatment of colorectal cancer[14] . The mode of action of this drug is to inhibit the upregulation of VEGF. This in turn will reverse the phenomena of neovascularization and edema formation[15] . Other uses of intravitreal Bevacizumab are retinopathy of prematurity (ROP), pseudophakic macular edema,central serious chorioretinopathy(CSCR) and radiation retinopathy[16-18]

Despite the beneficial effects one should remember that intravitreal injections of Bevacizumab carries the risk of traumatic cataract , endophthalmitis and retinal detachment[19].

Our study sample of 200 eyes for the intravitreal injection of Bevacizumab yielded adverse events in four eyes. This was comparable with other studies where there were multiple complications[3,7,8,9,10,11].It was therefore assumed that the complications were not associated with chemical composition of Bevacizumab but with the route of injection. The use of intravitreal Bevacizumab is still limited in our area of study because of the cost effectiveness and availability. It is therefore expected that with the passage of time the beneficial effects of this drug will make it freely available and price reduction to patient's range so that a large sample of study will be available to determine the Injection related risks versus therapeutic benefits.

CONCLUSION

Our study shows that the beneficial effectiveness of the drug overwhelms the adverse effects, which are themselves unrelated to the chemical composition of Bevacizumab.

Bevacizumab is a humanized monoclonal antibody that recognizes and blocks vascular endothelial growth factor A (VEGF-A). VEGF-A is a chemical signal that stimulates the growth of new blood vessels (angiogenesis).

The use of intravitreal bevacizumab to treat ocular diseases was first reported in 2005 for choroidal neovascularization (CNV) caused by AMD[1]. Intravitreal injection of bevacizumab is now used globally to treat diseases including:

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