

Ocular complications following intravitreal Bevacizumab (Avastine) injection for patients with proliferative Diabetic Retinopathy

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Abstract

To assess the rate of ocular complications in patients following intravitreal bevacizumab (Avastine) injection for patients with proliferative Diabetic Retinopathy. The study was conducted IBSAR center in Al-NAJAF, IRAQ on 2014, 100 patients participated in the study, their age ranging from 50 years old to 63 years old and followed up for 6 months for observation of the complications. The results were; ten patients have subconjunctival hemorrhage, two patients have post-operative endophthalmitis, three patients have slightly increase in their IOP post operatively, five patients complain of post-operative ocular pain, Sterile uveitis occurs in 1 patient, No retinal detachment occurs, No vitreous hemorrhage occurs. Intravitreal (Avastin) injection is generally safe with minimal risks, if we take good attention regarding sterilization, technique & surgical procedure.

Keyword: Diabetic Retinopathy; Avastine; Endophthalmitis retinal detachment; Vitreous hemorrhage

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Introduction

Diabetic retinopathy is predominantly a microangiopathy in which small blood vessels are particularly vulnerable to damage from hyperglycaemia, direct hyperglycaemic effects on retinal cells are

also likely to play a role [1, 2, 3]. Neovascularization is caused by capillary non perfusion which leads to retinal hypoxia which may progress to neovascularization in which new blood

vessels are appeared (proliferative diabetic retinopathy PDR), and intra-retinal microvascular abnormalities (IRMA) are shunts that run with in the retina from arterioles to veinules. New vessels growth is thought to be caused by imbalance between the elaboration of angiogenic and antiangiogenic factors, putatively in an attempt to revascularize the hypoxic retina [4, 5]. Many angiogenic stimulators have been identified, vascular endothelial growth factor (VEGF) especially VEGF-A appears to be of particular importance, others include platelet derived growth factor and hepatocyte growth factor, similarly several endogenous inhibitors of angiogenesis have also been reported such as endostatin, angiostatin and pigment epithelium derived factor [6,7,8].

It has been hypothesized that a key determinant of the activity of retinopathy is the net balance between VEGF and endostatin [1, 9, 10]. The principle of anti-VEGF is to prevent the VEGF-A form of the cytokine interacting with the relevant receptors on the endothelial cells surface and so retard or reverse neovascularization [6, 11, 12]. Bevacizumab (avastin) is a complete antibody used in case of proliferative diabetic retinopathy and other conditions of elevated VEGF level, it's out of label used since its cheaper in comparison to other anti-VEGF and

available in Iraq and associated with fewer systemic side effects and longer duration of action than the others the dose of bevacizumab is usually 1.25mg/0.05ml or 2.5mg/0.1ml [1, 13].

Material and method

The study took place in Al-Najaf, Iraq, in IBSAR private center for ophthalmology the study was conducted in 2014. 100 patients participate in the study their age ranging from 50 years old to 63 years old all of them having proliferative diabetic retinopathy. The following protocol of intravitreal injection was applied in each case, it's according to Jack J. Kanski Brad Bowling Clinical Ophthalmology, A systematic approach 2011.

All the patients given a preoperative medications for 3 days preoperatively, the preoperative medication include the following:

Moxifloxacin eye drop (vigamox) 3 hourly for 3 days. ciprofloxacin tablet 750 mg once daily for 3 days preoperatively. In the hospital before entering the patient to the operative theater all the patients were instructed to wash their faces 7 times by water and soap particularly chlorhexidine soap. Then each patient having the following antiseptic measures:

His face painted with iodine 10% iodine 5% applied to the conjunctival sac and ocular surface local anesthetic eye drop (Alcon)

Vigamox eye drop (moxifloxacin) was applied following each step. The injection of Avastin took place in operative theater, after putting a sterile drape, a sterile speculum the patient was instructed to look up and nasally in order to give the injection infero-temporally. A needle typically (30 gauge) insulin syringe was used following the injection (vigamox) eye drop was installed in the conjunctival sac.

Post-operative medications was:-

Vigamox eye drop hourly

Tobradex eye drop 2 hourly

Diamox (Acetazolamide 250 mg) 250 mg. 1X3.

Never wash his face with water for about 5 days. The patients seen the next day after operation, 1 week after and then monthly for 6 months.

Results

Ten patients have sub conjunctival hemorrhage that resolve spontaneously within a week. Two patients have post-operative endophthalmitis that respond well to intravitreal antibiotic injections (ceftazidime and vancomycin). Three patients have slight increase in their intra ocular pressure the mean IOP was 25 mmHg that gradually decrease within 5 days. Five patients complain of post-operative ocular pain that respond well to systemic paracetamol tab 1X3.

Sterile uveitis occur in one patient that respond well to topical steroids, No retinal detachment occurs, and No vitreous hemorrhage occurs, as shown in figure 1.

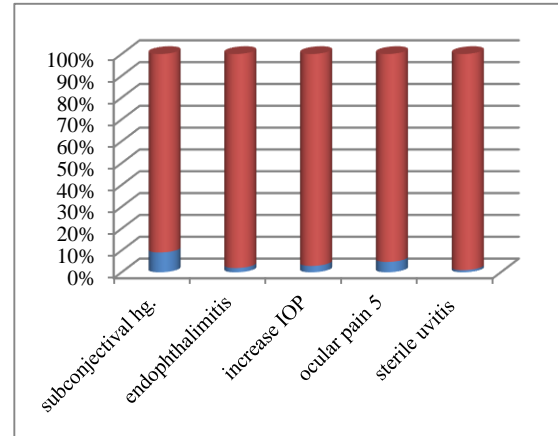


Figure 1. The rate of ocular complications after intravitreal Avastin injection.

Discussion

Bevacizumab, a monoclonal antibody used in the treatment of colorectal carcinoma as anti-VEGF was used off-label since 2004 by ophthalmologist around the world for the treatment of diabetic proliferative retinopathy and other conditions associated with elevated VEGF level in vitreous, many Anti-VEGF were introduced since.

But Avastin till now remain the most commonly used because it's much cheaper price, safety and less systemic side effects, the rate of stroke after bevacizumab injection is about 0.5% which is equal to the rate in the normal population, so in our study we concentrate on ocular post-operative. Complications rather than the systemic side effects and as we see from our

results most of the complication are simple and self-limiting and within the acceptable rate although two cases of endophthalmitis occur which is an acceptable risk and explained to all patients before the injection but we were lucky that these two patients respond well to intravitreal Antibiotic injection. Our opinion that avastin regarding its price and less systemic side effects and availability in our country considered the corner stone in proliferative diabetic retinopathy if compared with other Anti VEGF. Intra vitreal Avastin injection is generally safe with minimal risks, cheap, available, with less systemic side effect. But we have to take good attention regarding sterilization technique and preoperative preparation, surgical procedure and post-operative medication.

Competing interests

The author declare that there is no conflict of interest.

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