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Short Communication

# Incidence of endophthalmitis following intravitreal Bevacizumab injection at a tertiary care hospital in Eastern Province of Saudi Arabia

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## Abstract

The aim of this communication is to report the incidence of endophthalmitis following the use of intravitreal Bevacizumab (IVB) at a tertiary care hospital in the Eastern province of Saudi Arabia. A total of 2769 intravitreal Bevacizumab injections were carried out between January 2009 and April 2014. During this period, one case of endophthalmitis following IVB injection occurred. The overall incidence of clinical endophthalmitis was 0.036% (1/2769; 95% confidence interval: 0.0001–0.002%). This compares favorably with studies reported from other parts of the world.

**Keywords**: Endophthalmitis, Intravitreal Bevacizumab, Avastin, Saudi Arabia

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## Introduction

At present, treatment with intravitreal injection (IVI) of anti-VEGF agents is one of the most promising approaches for the treatment of vision loss due to wet age related macular degeneration, and macular edema secondary to retinal vascular disorders, such as diabetic retinopathy and retinal vein occlusion.[1] However, the administration of IVIs can be associated with complications such as endophthalmitis, retinal detachment, lens damage and vitreous hemorrhage. Of these complications, the most dreaded one is endophthalmitis, carrying a potential of causing severe sight loss and blindness.

Bevacizumab, is one of the most frequently used intravitreal anti-vascular endothelial growth factor (anti-VEGF) agents in the management of wet age related macular degeneration and retinal-vascular disorders in Saudi Arabia. No previous studies have reported the incidence of endophthalmitis following IVIs in Saudi Arabia. The aim of this communication is to report the incidence of endophthalmitis following the use of intravitreal Bevacizumab (IVB) at a tertiary care hospital in the Eastern province of Saudi Arabia.

## Patients and methods

A retrospective review of all patients who underwent intravitreal injections at the Dhahran Eye Specialist hospital, a tertiary care ophthalmic hospital in the eastern province of Saudi Arabia, was undertaken. Patients who underwent intravitreal Bevacizumab (Avastin® Genentech, South San Francisco, CA) injection (IVB) were identified by injection room log. The study was approved by the institutional review board of the hospital, and informed consent was obtained. Cases of established or presumed endophthalmitis following IVB were included in the study by searching the infection control

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database and surgeon's office records. Patients who did not fulfill the criterion for the diagnosis of endophthalmitis, such as post injection inflammation which improved on topical steroid and antibiotics, were excluded.

All injections were performed by retinal specialists or senior residents under supervision. The majority of patients underwent IVB for complications of diabetic retinopathy, such as diabetic macular edema, proliferative diabetic retinopathy and neovascular glaucoma. They also included other retinal-vascular disorders, such as branch retinal vein occlusion, central retinal vein occlusion, and wet age related macular degeneration. All injections were carried out in a designated clean room in the outpatient clinic. Bevacizumab for intravitreal injection was prepared in the hospital pharmacy, from the stock bottle using a self contained system for sterile preparation of drugs, using a 0.22 μ filter. The stock bottle, if part un-used was discarded after 2 weeks.

All patients had antibiotic drops (0.3% gatifloxacin) instilled in the conjunctival sac three times over half an hour prior to IVB injection. Surgical masks and surgical drapes were not used during the procedure. Sterile gloves were used, and no restriction was placed on conversation during the procedure. The conjunctiva was anesthetized with 0.5% topical Benoxinate drops. Lids and conjunctiva were prepared with 10% and 5% povidone iodine respectively, followed by the placement of an eyelid speculum. 1.25 mg Bevacizumab was injected with a 30 g needle through the pars plana (3.5 mm from limbus) into the vitreous cavity. An eye pad was placed and 0.3% gatifloxacin topical drops were prescribed to be used four times daily for four days post injection. All patients following IVB injection were followed up in the clinic usually at 1–3 monthly intervals, and more frequently if deemed necessary by the treating physician.

## Results

A total of 2769 IVB injections were carried out between January 2009 and April 2014. During this period, one case of endophthalmitis following IVB injection occurred. The overall incidence rate of clinical endophthalmitis was 0.036% (1/2769; 95% confidence interval: 0.0001–0.002%).

### *Case report*

A 64-year-old female with a 30 year history of type 2 diabetes was seen in the retina clinic in March 2009. She presented with sudden reduction of vision in her right eye secondary to ischemic central retinal vein occlusion, reducing her vision to counting fingers in the affected eye. In view of marked ischemia and retinal edema, intravitreal injection of Bevacizumab was undertaken in the right eye.

Two days after IVB, she presented with pain, redness, inflammation, vitritis and hypopyon in the affected eye. A clinical diagnosis of endophthalmitis was made, and she underwent a vitreous diagnostic tap and intravitreal injection of antibiotics (Ceftazidime 2 mg and Vancomycin 1 mg). The gram stain showed gram positive cocci and streptococci were cultured. Her condition did not improve over the next 12 h, thus a pars plana vitrectomy and re-injection of antibiotics at the end of surgery was performed. Her inflammation improved over next few days. At her last visit in January 2014, her visual acuity was light perception and the retina was flat with evidence of some vascular sclerosis.

## Discussion

This is first study to document the incidence of endophthalmitis following intravitreal injections in Saudi Arabia. We found an incidence of 0.036% (1/2769; 95% confidence interval: 0.0001–0.002%) following IVB, which compares favorably with studies reported from other parts of the world. Flavarjani et al.[2] reported an incidence of 0.1% from a single clinical center in the Middle East following 5901 IVB injections. Mason et al.[3] during a 23-month study interval, at a practice in the United States, found that the overall incidence rate of postinjection endophthalmitis was 0.019% (1/5233), while Fintak et al.[4] reported an endophthalmitis rate of 0.025% following 12,585 injections of intravitreal bevacizumab. The endophthalmitis rates seem to be lower in larger studies, as compared to studies with a number of injections involving less than 2000 patients.

All injections in our study were administered in a dedicated clean room (in-office) rather than in an operating room (OR). It is not certain whether endophthalmitis rates are lower if IVIs are performed in an OR. Tabandeh et al.[5] found an endophthalmitis rate of 0.035% and 0.065% in patients undergoing IVIs in-office and OR respectively. They concluded that the rate of clinically suspected endophthalmitis after IVIs is low regardless if the procedure is performed in the office or operating room setting. Endophthalmitis is a devastating complication, and bacteria are introduced into the eye at the time or immediately following IVI. Hence, appropriate precautions such as cleaning of eyelids and antisepsis with Povidone Iodine are important in reducing the risk of endophthalmitis. However, it is debatable whether the use of a face mask, pre and post injection antibiotics and use of sterile drapes is necessary.

In conclusion, this study documents an incidence rate of 0.036% following IVB injections at a tertiary care hospital in Eastern province of Saudi Arabia, which compares favorably with studies reported from other parts of the world.

## Conflict of interest

The authors declare that there is no conflict of interest.

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