PREOPERATIVE USE OF TRIAMCINOLONE IN DIABETIC VITRECTOMY

By

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ADVACED VIRECTOMY COURSE

background

Because VEGF has been shown to play a major role in retinal neovascularization in conjunction with other factors, anti-VEGF treatments have been hypothesized as an alternative adjunctive treatment for retinal neovascularization.

Bevacizumab (Avastin) is a humanized anti-vascular endothelial growth factor (VEGF).

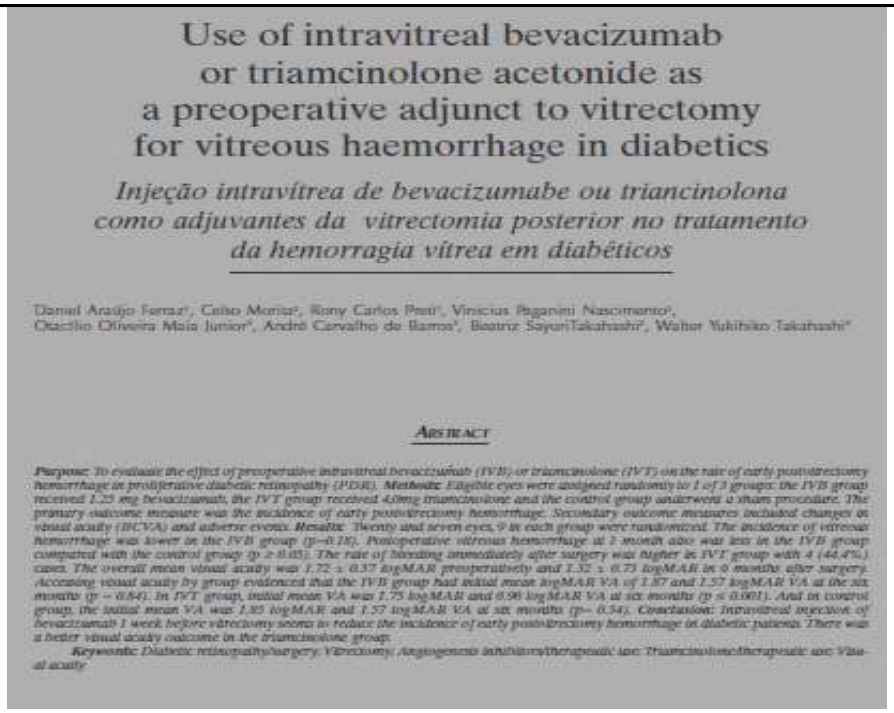
Is used to to treat ocular neovascular disorders including PDR and also as Adjunctive for severe PDR before vitrectomy **(Spaide RF, Fisher YL.,2006)**

However, the preferable timing from the injection to surgery has not been determined yet.

The retinal neovascular proliferation in PDR often has an accompanying inflammatory component.

The intravitreal (IV) steroid injections particularly triamcinolone acetonide, may potentially be important in quelling intraocular inflammation **(Machemer R, and Sugita G, Tano Y.,1979)**

It is therefore Intravitreal steroid injections could be beneficial to PDR.



Use of intravitreal bevacizumab or triamcinolone acetonide as a preoperative adjunct to vitrectomy for vitreous haemorrhage in diabetics

Injeção intravítrea de bevacizumabe ou triancinolona como adjuvantes da vitrectomia posterior no tratamento da hemorragia vítrea em diabéticos

Daniel Araújo Ferraz[I], Celso Morisi[II], Rony Carlos Preti[I], Vinicius Paganini Nascimento[II], Otacílio Oliveira Maia Junior[II], André Carvalho de Barros[I], Beatriz SayuriTakahashi[II], Walter Yukihiko Takahashi[II]

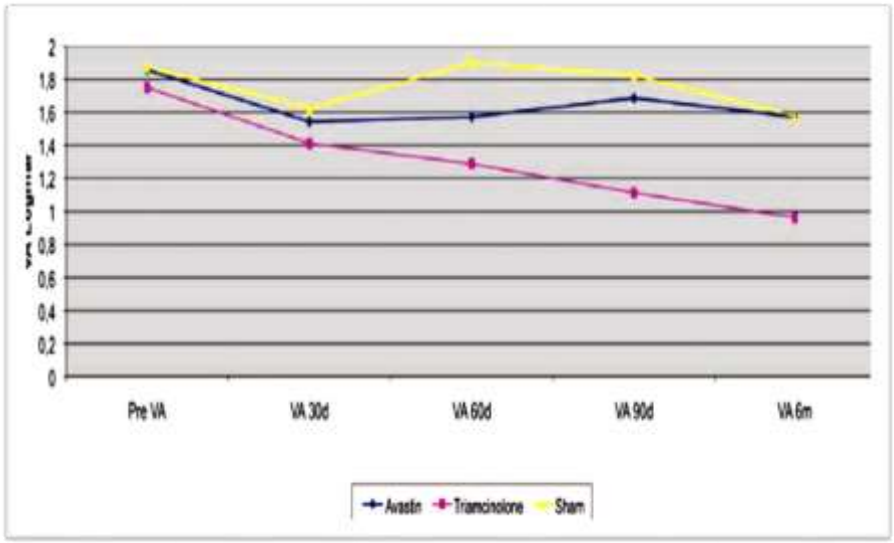
ABSTRACT

Purpose: To evaluate the effect of preoperative intravitreal bevacizumab (IVB) or triamcinolone (IVT) on the rate of early postvitrectomy hemorrhage in proliferative diabetic retinopathy (PDR). Methods: Eligible eyes were assigned randomly to 1 of 3 groups: the IVB group received 1.25 mg bevacizumab, the IVT group received 4.0mg triamcinolone and the control group underwent a sham procedure. The primary outcome measure was the incidence of early postvitrectomy hemorrhage. Secondary outcome measures included changes in visual acuity (BCVA) and adverse events. Results: Twenty and seven eyes, 9 in each group were randomized. The incidence of vitreous hemorrhage was lower in the IVB group (p=0.18). Postoperative vitreous hemorrhage at 1 month also was less in the IVB group compared with the control group (p = 0.05). The rate of bleeding immediately after surgery was higher in IVT group with 4 (44.4%) cases. The overall mean visual acuity was 1.72 ± 0.37 logMAR preoperatively and 1.32 ± 0.73 logMAR in 6 months after surgery. Accessing visual acuity by group evidenced that the IVB group had initial mean logMAR VA of 1.87 and 1.57 logMAR VA at the six months (p = 0.64). In IVT group, initial mean VA was 1.75 logMAR and 0.96 logMAR VA at six months (p ≤ 0.001). And in control group, the initial mean VA was 1.85 logMAR and 1.57 logMAR VA at six months (p= 0.54). Conclusion: Intravitreal injection of bevacizumab 1 week before vitrectomy seems to reduce the incidence of early postvitrectomy hemorrhage in diabetic patients. There was a better visual acuity outcome in the triamcinolone group.

Keywords: Diabetic retinopathy/surgery; Vitrectomy; Angiogenesis inhibitors/therapeutic use; Triamcinolone/therapeutic use; Visual acuity

Abstract

Purpose: To evaluate the effect of preoperative intravitreal bevacizumab (IVB) or triamcinolone (IVT) on the rate of early postvitrectomy hemorrhage in proliferative diabetic retinopathy (PDR). **Methods:** Eligible eyes were assigned randomly to 1 of 3 groups: the IVB group received 1.25 mg bevacizumab, the IVT group received 4,0mg triamcinolone and the control group underwent a sham procedure. The primary outcome measure was the incidence of early postvitrectomy hemorrhage. Secondary outcome measures included changes in visual acuity (BCVA) and adverse events. **Results:** Twenty and seven eyes, 9 in each group were randomized. The incidence of vitreous hemorrhage was lower in the IVB group (p=0.18). Postoperative vitreous hemorrhage at 1 month also was less in the IVB group compared with the control group (p ≥ 0.05). The rate of bleeding immediately after surgery was higher in IVT group with 4 (44.4%) cases. The overall mean visual acuity was 1.72 ± 0.37 logMAR preoperatively and 1.32 ± 0.73 logMAR in 6 months after surgery. Accessing visual acuity by group evidenced that the IVB group had initial mean logMAR VA of 1.87 and 1.57 logMAR VA at the six months (p = 0.84). In IVT group, initial mean VA was 1.75 logMAR and 0.96 logMAR VA at six months (p ≤ 0.001). And in control group, the initial mean VA was 1.85 logMAR and 1.57 logMAR VA at six months (p= 0.34). **Conclusion:** Intravitreal injection of bevacizumab 1 week before vitrectomy seems to reduce the incidence of early postvitrectomy hemorrhage in diabetic patients. There was a better visual acuity outcome in the triamcinolone group.



Clinical Trials

Effect of Intravitreal Triamcinolone Acetonide or Bevacizumab on Choroidal Thickness in Eyes With Diabetic Macular Edema

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Purpose. We evaluated the effect of intravitreal triamcinolone acetonide (IVTA) or intravitreal bevacizumab (IVB) on subfoveal choroidal thickness (SFCT) in eyes with diabetic macular edema (DME).

Methods. In this prospective, randomized, interventional comparative study, 51 DME eyes of 51 patients were randomized to receive either IVTA or IVB. The central macular thickness (CMT) and SFCT were determined by optical coherence tomography at 24 hours, 7 days, and 4, 8, and 12 weeks. The SFCT at 1500 and 3000 µm nasal or temporal to the central fovea also was measured. The values obtained before were compared to those obtained 12 weeks after the injections.

Results. The eyes were randomly assigned to the IVTA (25 eyes) and IVB (26 eyes) groups. The SFCT was reduced significantly in the IVTA group from 24 hours to 12 weeks. The average ± SD of the SFCT expressed as the ratio to baseline thickness decreased to 94.8% ± 5.6% ($P < 0.01$) at 24 hours after IVTA and remained unchanged up to 12 weeks (91.8% ± 10.5%, $P < 0.01$, Wilcoxon signed-rank test). In the IVB group, no significant difference was found in the SFCT after IVB for 12 weeks. The CMT decreased significantly in both groups from 24 hours to 4 weeks; however, the decrease was not significant at 8 weeks or later in the IVB group.

Conclusions. The decrease in choroidal thickness in eyes with DME after IVTA suggests that the choroidal pathology in diabetic retinopathy might be due to steroid-sensitive factors rather than vascular endothelial growth factor. (www.umin.ac.jp/ctr number, clinical trials number UMIN000009854.)

Key words: diabetic retinopathy, choroid, steroid

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Comparative Study between Pre and Post Intravitreal Injection of Triamcinolone Acetonide Regarding RNFL Thickness in Macular Oedema by OCT

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Abstract

Purpose: To evaluate the efficacy of pre and post intravitreal Triamcinolone acetonide injection used in treatment of macular oedema (diabetic and complicating vein occlusion) on RNFL thickness as evaluated by OCT.

Patient and method: 53 eyes were included in this study with macular oedema with age 50 - 65 years where RNFL thickness measured before treatment of macular oedema and RNFL thickness measured for the same eyes after treatment by single intravitreal Triamcinolone injection (4mg in 0.1 ml . RNFL thickness was evaluated by OCT pre and at an interval of 3 months post-injection in

Results: The mean RNFL thickness did not change significantly after a single injection of intravitreal TA for treatment of patients with macular oedema.

Mean average, inferior, superior, nasal and temporal RNFL thickness pre injection was 91.63 +/-10.5, 118.9 +/- 19.95, 104.57 +/- 15.3, 76.33 +/- 10.8 and 69.13 +/- 10.26. Mean average, inferior, superior, nasal and temporal RNFL thickness post injection was 90.83 +/- 10.11, 111.8 +/- 19.95, 103.8 +/- 15.03, 76.00 +/- 11.7 and 69.9 +/- 10.3.

Conclusion: In short term, comparing pre and pos intravitreal Triamcinolone injection single dose used to treat macular oedema on the thickness of RNFL, didn't lead to significant changes on RNFL thickness despite the possibility of intra-ocular pressure fluctuation.

Clinical Ophthalmology

Dovepress

CASE REPORT

Resolution of vitreomacular traction following intravitreal triamcinolone acetonide injection in an eye with branch retinal vein occlusion

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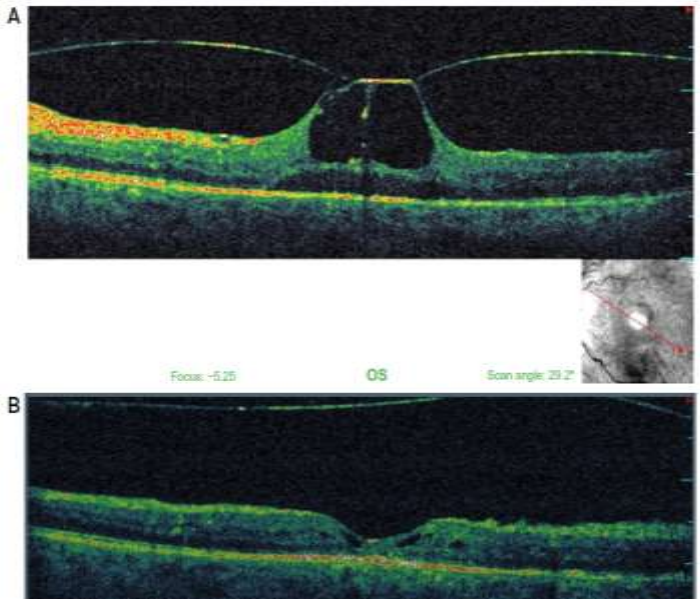
Abstract: A 60-year-old woman with a past medical history of branch retinal vein occlusion presented with decreased vision and metamorphopsia in her left eye. A fundus examination revealed a tortuous retinal vein with a few retinal hemorrhages in the inferotemporal quadrant. Optical coherence tomography revealed a partially separated posterior vitreous membrane pulling up the fovea. The patient refused surgical treatment so intravitreal triamcinolone acetonide (4 mg/0.1 mL) was administered. The patient reported resolution of symptoms in her left eye following this treatment, but her visual acuity did not show any improvement. Optical coherence tomography scanning revealed a complete detachment of the posterior hyaloid with release of the vitreomacular traction. In patients with vitreomacular traction and branch retinal vein occlusion, the combination of the possible vitreous liquefaction and mechanical increase of vitreous volume caused by an intravitreal injection with a degree of reduction in retinal thickness may play a role in the resolution of vitreomacular traction.

Keywords: macular edema, vitreomacular traction syndrome, intravitreal injection, posterior vitreous detachment



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BMC Ophthalmology

RESEARCH ARTICLE Open Access

Quantitative evaluation of hard exudates in diabetic macular edema after short-term intravitreal triamcinolone, dexamethasone implant or bevacizumab injections

Yong Un Shin†, Eun Hee Hong†, Han Woong Lim, Min Ho Kang, Mincheol Seong and Heeyoon Cho*

Abstract

Background: To quantitatively compare short-term hard exudates (HEs) alteration in patients with diabetic macular edema (DME) after intravitreal triamcinolone, dexamethasone implant or bevacizumab injections.

Methods: This retrospective study enrolled DME eyes with HEs that underwent a single-dose intravitreal injection of triamcinolone (25 eyes), dexamethasone implant (20 eyes), or three monthly injections of bevacizumab (25 eyes) and completed at least three months of follow-up. All patients were examined before and after 1, 2 and 3 months of injections. Using color fundus photographs, the amount of HEs was quantified by two masked graders. The difference in HEs area between baseline and each follow-up visit was compared among the three groups.

Results: After three months, HEs area was reduced to 52.9 ± 4.21% ($P < 0.001$) in the triamcinolone group, 63.6 ± 6.08% ($P = 0.002$) in the dexamethasone implant group, and 85.2 ± 5.07% ($P = 0.198$) in the bevacizumab group. A significant reduction in HEs appeared at one month in the triamcinolone group (53.5 ± 4.91%, $P < 0.001$) and at two months in the dexamethasone implant group (70.1 ± 5.27%, $P = 0.039$).

Conclusions: Our study suggests intravitreal steroids (triamcinolone, dexamethasone implants) significantly reduce HEs in DME patients on short-term follow-up, whereas intravitreal bevacizumab does not. Therefore, intravitreal steroids may be useful in DME with HEs in the fovea.

Keywords: Bevacizumab, Dexamethasone implant, Diabetic macular edema, Hard exudate, Triamcinolone

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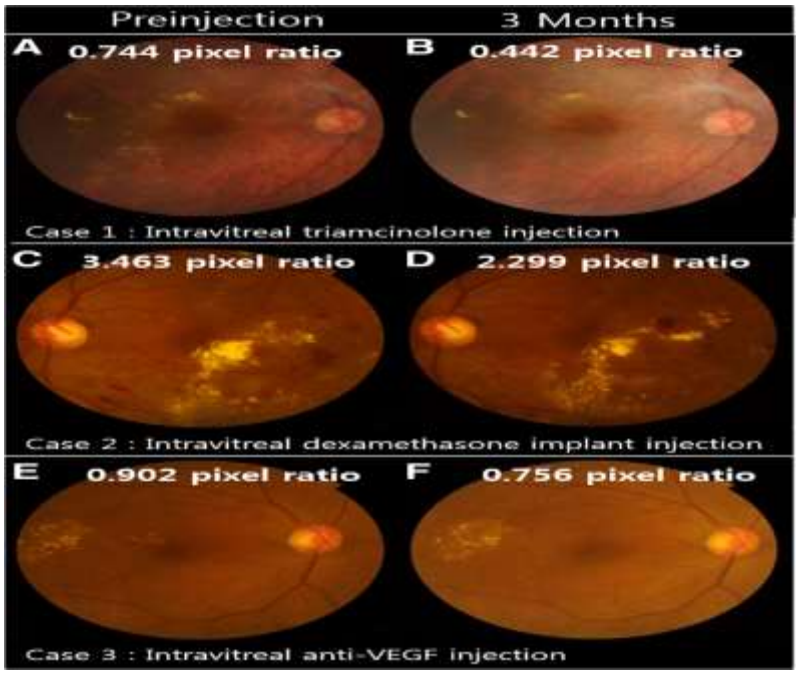

Retina

The Effect of Intravitreal Injection of Bevacizumab on Retinal Circulation in Patients with Neovascular Macular Degeneration

Olivier Fontaine,[1,2,3] *Sébastien Olivier,*[1] *Denise Descovich,*[1] *Ghassan Cordahi,*[1] *Elvire Vaucher,*[2] *and Mark R. Lesk*[1,3]

Purpose. Intravitreal (ITV) injection of anti-VEGFs like bevacizumab are widely used to treat neovascular AMD. However, VEGF is essential for biologic functions such as blood pressure regulation. Indeed, anti-VEGF intravenous administration is associated with hypertension. Therefore, the effect of ITV bevacizumab on retinal circulation was examined.

Methods. Twenty-three patients with neovascular AMD treated with three repeat ITV injections of bevacizumab were recruited. Blood arteriolar diameter and flow measurements were performed with a bidirectional laser Doppler flowmeter at baseline, 1 week after the first injection, just before the second injection, and 5 weeks after the third injection. Scanning laser Doppler flowmetry was used to assess the effect of bevacizumab on tissue perfusion at the first and fourth visits.

Results. Arteriolar diameter significantly decreased from 122.5 ± 14.5 μm to 118.9 ± 14.0 μm ($P = 0.03$) during the first week to reach a mean value of 117.2 ± 13.7 μm at the end of the study ($P < 0.01$). Arterial blood flow did not change significantly. Neuroretinal rim perfusion decreased from 181.1 ± 84.1 arbitrary flow units to 167.7 ± 76.5 arbitrary flow units, which was borderline significant ($P = 0.06$). No

Ocular diseases involving angiogenesis are particularly destructive to central visual acuity. Among those, AMD is a leading cause of severe visual loss in industrialized countries.[1] Many studies bring to light the essential role of VEGF in choroidal neovascularization (CNV) through its effect on proliferation, migration, and cell differentiation.[2] In humans, VEGF levels seem to be correlated to the degree of the activation of neovascularization and vascular permeability.[3] VEGF therefore appears to be the most prominent molecule inducing neovascularization, and consequently, treatments inhibiting VEGF bioactivity have been widely used as the new paradigm to treat neovascular AMD.

Bevacizumab, a full-length anti-VEGF antibody approved for systemic use in some solid tumors, is the prime molecule used to treat CNV by intravitreal injection (ITV). Its efficacy is related to its property to inhibit all VEGF-A isoforms.[4] This off-label use was first reported by Rosenfeld et al.[5] and has led to many subsequent studies on the innocuity and the effectiveness of this anti-VEGF molecule.[6] Even if the use of bevacizumab can be theoretically associated with serious ocular adverse side effects, many clinical studies have shown that ITV injections of bevacizumab are well tolerated.[7–9] However, intravenous injections of bevacizumab have been associated with

RESULTS. Arteriolar diameter significantly decreased from 122.5 ± 14.5 μm to 118.9 ± 14.0 μm ($P = 0.03$) during the first week to reach a mean value of 117.2 ± 13.7 μm at the end of the study ($P < 0.01$). Arterial blood flow did not change significantly. Neuroretinal rim perfusion decreased from 181.1 ± 84.1 arbitrary flow units to 167.7 ± 76.5 arbitrary flow units, which was borderline significant ($P = 0.06$). No significant change was observed in the peripapillary retina.

CONCLUSIONS. Arteriolar diameter decreased significantly after the first injection and persisted until the end of the study suggesting a long-term effect of bevacizumab on vascular tone. However, the blood flow change is not significant. A borderline significant decrease in neuroretinal rim perfusion was observed and suggests that the neuroretinal rim may be more sensitive than the peripapillary retina to the effects of bevacizumab. (*Invest Ophthalmol Vis Sci.* 2011;52: 7400–7405) DOI:10.1167/iovs.10-6646

Conclusion

Potential benefits of IVTA are:

1-Better long term VA

2-NO effect on RNFL thickness despite IOP transient rise.

3-Reduction of choroidal thickness more than ANTIVEGF.

4-Resolution of hard exudates more than ANTIVEGF.

5-Possibility of relieve of VMA (ANT-VEGF)

6-USE of Silicone Oil decreases the postop.VH.

الحمد لله رب العالمين