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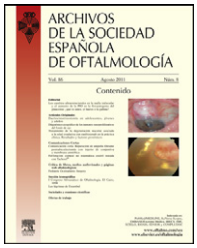

Original article

Intracameral bevacizumab (Avastin®) in the management of neovascular glaucoma surgery☆,☆☆

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ABSTRACT

Purpose: To describe a case series of neovascular glaucoma treated with intracameral bevacizumab prior to filtering surgery.
Design: Descriptive, retrospective case series.
Methods: Five eyes of 5 patients with neovascular glaucoma due to any cause candidates to filtering surgery who had previously received an injection of intracameral bevacizumab (1.25 mg/0.05 ml) as treatment for neovascularization of anterior chamber. Results observed one week and 4 weeks post-surgery are reported.
Results: Bevacizumab produced regression of the angle neovascularization and the intraocular pressure. Only one case of postoperative bleeding was detected.
Conclusions: Intracameral bevacizumab prior to filtering surgery of neovascular glaucoma diminished the neovascularization and intraocular pressure after 4 weeks of its administration and was effective in preventing intraoperative and postoperative bleeding. It also constitutes a promising way of investigation to prevent surgical complications.

Bevacizumab (Avastin®) intracamerular en el manejo quirúrgico del glaucoma neovascular

Palabras clave:
Bevacizumab
Glaucoma neovascular
Cirugía filtrante
Antiangiogénicos
Inyección intraocular

RESUMEN

Propósito: Describir una serie de casos con glaucoma neovascular que fueron tratados con bevacizumab intracamerular previo a la cirugía filtrante.
Diseño: Descriptivo, retrospectivo, tipo serie de casos.
Métodos: Cinco ojos de cinco pacientes con glaucoma neovascular de cualquier causa candidatos a cirugía filtrante recibieron previamente una inyección de bevacizumab (1,25 mg/0,05 ml) intracamerular como tratamiento de la neovascularización angular. Se describen los resultados observados a la semana y a las 4 semanas poscirugía.
Resultados: Bevacizumab produjo una regresión importante de los neovasos y de la presión intraocular. Se detectó un único caso de sangrado postoperatorio.

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Conclusiones: Bevacizumab intracamerular previo a cirugía filtrante de glaucoma disminuyó la neovascularización del segmento anterior y la presión intraocular a las 4 semanas de su administración y resultó eficaz en impedir el sangrado intra- y postoperatorio. También constituye una prometedora vía de investigación para prevenir las complicaciones quirúrgicas.

Introduction

Bevacizumab ([BVI]: Avastin®, Genentech, Inc., South San Francisco, CA) is a recombinant monoclonal antibody with specificity for all the active isoforms of the endothelial vascular growth factor A (VEGF-A).[1] It was designed for intravenous use and approved in 2004 for metastatic colorectal cancer in combination with chemotherapy. To date, intraocular administration of bevacizumab is not approved.[2] However, numerous papers suggest it has a beneficial role in ophthalmic use.

In 1998, Tripathi et al.[3] documented the increase of VEGF-A in the aqueous humor of patients with neovascular glaucoma (NVG). Mason et al.[4] proposed intravitreous BVI for patients with NVG, recurring hemorrhage of iridian neovessels and those with neovessels despite panphotocoagulation (PFC). Jonas et al.[5] documented in 2 cases the normalization of intraocular pressure (IOP) with the use of intravitreous BVI together with filtration surgery in NVG. Andreoli and Miller[6] proposed the use of intravitreal BVI in patients who underwent panphotocoagulation to avoid the complete closure of the angle while it takes effect.

The administration of BVI in posterior segment neovascularization processes is broadly documented.[5,7,8] However, intra-chamber administration can also be beneficial in anterior segment neovascularization processes (Fig. 1).[6,8–12] Wakabayashi et al.[13] observed adequate control of IOP in patients with NVG without the closure of the angle if administered in early stages. Recently, a series of 6 cases[14] with neovascular glaucoma and BVI injection prior to panphotocoagulation or filtrating surgery was published. The publication suggested the adjuvant effect of this technique when applied prior to surgery. It seems that IOP can be poorly controlled in advanced stages even though surgical results improved when applying BVI as an adjuvant.

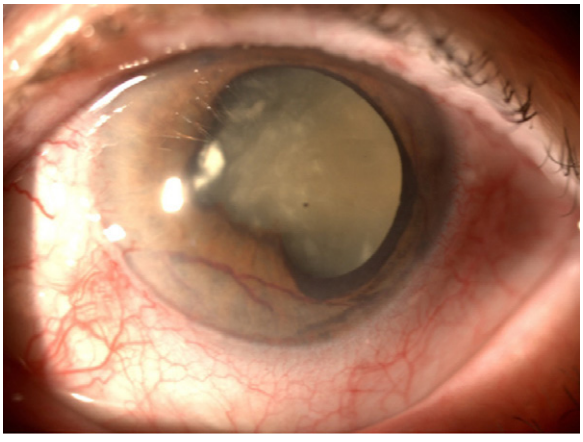

Fig. 1 – Rubeosis iridis and iridian synechiae in pharmacological midriasis.

The only comparative study that the authors have found is a retrospective series of cases in which Chen et al.[15] found improved visual acuity in a six-month follow-up. In patients with NVG treated with intravitreous BVI or plus trabeculectomy compared with trabeculectomy on its own.

The objective of this study is to describe a series of cases with neovascular glaucoma treated with BVI intrachamber prior to glaucoma filtrating surgery.

Subjects, materials and methods

The database of the Fuenlabrada University Hospital was searched to select the clinical records with the following inclusion criteria:

- NVG due to any cause. NVG was taken to be a sustained IOP of ≥21 mmHg as a consequence of an ocular ischemia process and the presence of neovascularization in the anterior segment or irido-corneal angle.
- Candidate for NVG surgical treatment with filtrating surgery and administration of BVI (single dose of 1.25 mg/0.05 ml) intrachamber 24 h prior to surgery.

The Ahmed valve was implanted in all surgeries because our hospital has more experience with it. The indication for surgery was established in the case of failed IOP and symptomatic control despite having received PFC and at least 2 ocular hypotensor drugs.

The cases that previously received any dose of intraocular or systemic antiangiogenic drug (BVI, ranibizumab or pegaptanib) were excluded.

It was considered that intrachamber administration excluded some of the risks involved in intravitreal injection such as iatrogenic cataracts, retinal regmatogenous lesions or subconjunctival drug diffusion. As the purpose was to act upon iris and angle neovascularization, that intrachamber pathway allowed the action of BVI on the NVG vessels, involving lower risk for the eye.

The BVI injection in the anterior chamber was done with a 30 g and assisted by surgical microscope.

The patients were informed verbally and in writing that the indication of intrachamber BVI is based on compassionate use due to the current lack of evidence recommending its administration. All patients signed the appropriate informed consent.

All the variables considered to be relevant to describe the effect of intrachamber BVI in filtrating surgery were analyzed