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SHORT COMMUNICATION

Case report

Ibopamine treatment in chronic hypotony secondary to long-lasting uveitis. A case report

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PURPOSE. *To assess the clinical efficacy of ibopamine eye drops in severe hypotony secondary to chronic progressive uveitis.*
METHODS. *Case report. A 47-year-old man with a 37-year history of diffuse uveitis and severe refractory hypotony was treated with topical 2% ibopamine (Trazyl®) six times a day. Intraocular pressure, visual acuity, visual field and side effects were recorded during 15 months of follow-up.*
RESULTS. *IOP, visual acuity and visual field increased after four days of therapy and lasted for two months when the drug was suspended because of the onset of filamentous keratopathy. A new course of treatment with 2% ibopamine eye drops in a different solvent (BSS®) resulted in a stable increase in IOP, VA and visual field, with no side effects in a follow-up of 13 months.*
CONCLUSIONS. *Ibopamine 2% eye drops in BSS® solvent seem effective in the treatment of uveitis-related hypotony. (Eur J Ophthalmol 2000; 10: 332-4)*

KEY WORDS. *Hypotony, Ocular pressure, Uveitis*

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INTRODUCTION

Ocular hypotony is a potential complication of long-lasting intraocular inflammation that can progress to corneal failure, macular edema, optic nerve swelling and bulbar phthisis (1, 2). Medical treatment of irreversible ocular hypotony resulting from chronic persistent uveitis is based mainly on local, peribulbar and systemically administered steroids whose efficacy, however, is limited (3, 4). Ibopamine, an ester of methyldopamine, has been studied: by stimulating the production of aqueous humor, ibopamine raises intraocular pressure (IOP). This effect has been described in cases of ocular hypotony following post-operative procedures (5-8).

We describe a case of ocular severe hypotony secondary to progressive chronic uveitis, treated successfully with ibopamine eye drops.

Case report

In February 1998 we examined for the first time a 47-year-old man with a 37-year history of bilateral diffuse uveitis, bilateral cataract extraction in 1970 and enucleation of LE in 1997, with persistent hypotony in RE since 1997 refractory to prolonged systemic and topical steroids. At the first examination he showed a best-corrected visual acuity (BCVA) of 4/50, diffuse corneal edema, 2+ flare and 1+ cells in the anterior chamber, seclusio pupillaris, epipupillary cyclitic membrane, aphakia, 2+ vitreous cells and opacities, optic disk swelling, diffuse chorioretinal atrophy and ischemic changes at the posterior pole. IOP was 2 mmHg, ultrasonography showed diffuse choroidal and optic disk edema and Goldmann perimetry gave a restricted visual field at 5°. A complete work-up for uveitis was unremarkable, as was his medical history, except

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for reported allergic rhinitis. After two months of topical dexamethasone (0.1% eye drops), peribulbar methylprednisolone acetate (40 mg every 7 days), and systemic prednisone (25 mg/day) the IOP decreased to 0 mmHg and BCVA fell to 1/50. Therefore after obtaining his informed consent, the patient was given 2% ibopamine eye drops (Trazyl ®) six times daily in combination with topical steroids as previously described, while the systemic steroids were gradually reduced and stopped in 30 days. Four days after starting this regimen the IOP increased to 6 mmHg and remained stable for the next two months, ranging from 6 to 9 mmHg. BCVA improved to 1/10 and visual field extended to 10-12°, while the optic disk edema decreased. However, because of the onset of a filamentous keratopathy, 2% ibopamine eye drops were stopped after 65 days of therapy during which no systemic side-effects had occurred. One week after withdrawal of the treatment, the filamentous keratopathy disappeared, but the IOP dropped to 3 mmHg, BCVA to 3/50 and the visual field to 5°. Two months later IOP was 0 mmHg.

During this six-month observation period (before, during and after the first ibopamine series) BCVA appeared to be correlated to IOP (linear correlation IOP/BCVA: 2 = 0.66, p = 0.033). In October 1998 the patient was again given 2% ibopamine eye drops, in which the commercially available solvent (benzalkonium chloride, hydroxypropylmethylcellulose and phosphate buffer in water solution) was replaced with balanced saline solution (BSS®). Ten days after restarting ibopamine the IOP rose to 8 mmHg, BCVA to 1/10 and visual field to 10°. During 15 months of follow-up the IOP remained stable at 7-10 mmHg, as did BCVA and visual field. In the whole period no signs of changes were detected in uveal inflammation.

DISCUSSION

Hypotony due to progressive chronic uveitis can be caused by chronic inflammation of the ciliary body with subsequent hyposecretion, increase of the uveal-scleral outflow through an uveal-scleral pathway destroyed by the inflammatory process, and cyclitic membrane formation resulting in detachment of the ciliary body (1, 2). Ibopamine is the 3,4 dyisobutyryl ester of N-methyldopamine. Once in the anterior chamber, it is hydrolyzed to methyldopamine, a structural analogue of dopamine whose effects are responsible for mydriasis and an increase in the production of aqueous humour (6, 9).

Ibopamine was initially proposed in those cases of ocular hypotony after vitreous-retinal surgery and antiglaucomatous filtering procedures (7, 8).

Ibopamine's action is mediated by stimulation of the D1 - dopaminergic receptor which is probably located in the non-pigmented ciliary epithelium. The activation of this receptor induces a 3-4-fold increase of the production of acqueous humor compared to baseline values in healthy subjects; this effect is dose-dependent and reproducible with time (10).

In the patient described, ibopamine was effective in improving the ocular hypotony due to progressive chronic uveitis, and we can postulate that this action may be due to stimulation of the ciliary epithelium. IOP compatible with satisfactory visual function (above 6 mmHg) were maintained throughout treatment but were lost on drug withdrawal. No changes in the course of uveitis were detected during the ibopamine therapy and when it was stopped and, particularly, there was no evidence of uveitis relapses or occurrence of uveitis-related complications. This confirms that ibopamine has no action on the permanent damage to the blood-ocular barrier found in chronic uveitis. The only side effect was the onset of filamentous keratopathy observed 65 days after starting therapy; this may have been due either to intolerance to the solvent of the eye drops or to the patient's atopic status. With discontinuation of therapy the corneo-conjunctival reaction resolved completely in seven days but it caused a persistent decrease of IOP. Subsequent dilution of the drug with BSS® was well tolerated, with similar long-lasting therapeutic effects.

To the best of our knowledge this is the first report on the efficacy of ibopamine eye drops in chronic uveitis-related hypotony. However, this efficacy is related to a residual function of the ciliary body, so further studies are needed to identify which patients can benefit from ibopamine treatment, and to assess tolerance with prolonged administration.

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REFERENCES

1. Pivetti-Pezzi P. Uveiti. Milano: Masson, 1996.
2. Rao NA, Forster DJ, Augsburger JJ. The uvea, uveitis and intraocular neoplasm. New York: Gower Med Publ, 1992.
3. Pederson JE. Ocular hypotony. In: Ritch R, Krupin T, Bruce Shields M. eds. The Glaucomas. St Louis: Mosby, 1989.
4. Pederson JE, Mac Lellan HM. Medical therapy for experimental hypotony. Arch Ophthalmol 1982; 100: 815.
5. Virno M, Pecori-Giraldi J, Taverniti L, Taloni M, Bruni P. Effetti ipertensivi oculari dell'ibopamina somministrata per via locale in soggetti con turbe idrodinamiche endoculari. Boll Ocul 1987; 66: 833-6.
6. Soldati L, Gianesello V, Galbiati V, Galbiati I, Gazzaniga A, Virno M. Ocular pharmacokinetics and pharmacodynamics in rabbits of ibopamine, a new mydriatic agent. Exp Eye Res 1993; 56: 247-54.
7. Virno M, De Gregorio F, Pannarale L, Arrico L. Topical ibopamine and corticosteroid in the treatment of post-surgery ocular hypotony. Int Ophthalmol 1997; 20: 147-50.
8. Frezzotti R, Ciappetta R, Frezzotti P, Nuti A. Use of ibopamine eye drops for the treatment of hypotony after trabeculectomy. Int Symp Exp Clin Ocular Pharmacol, Geneve, Switzerland, 1995 pag. 64.
9. Virno M, Pecori Giraldi J, Taverniti L, Taloni M, Pannarale L. Intraocular hypertensive effects of topically administered ibopamine in eye with hydrodynamic disorders: a new provocative test for glaucoma. Glaucoma 1990; 12: 88.
10. Virno M, Taverniti L, De Gregorio F, Sedran L, Longo F. Increase in aqueous humour production following D1 receptors activation by means of Ibopamine. Int Ophthalmol 1997; 20: 141-6.