Graefes Arch Clin Exp Ophthalmol (2013) 251:1023–1024
DOI 10.1007/s00417-012-2048-y

LETTER TO THE EDITOR

Management of cyclodialysis cleft associated to hypotonic maculopathy

Mario R. Romano · Riccardo Vinciguerra · Alessandro Randazzo · Paolo Vinciguerra

Received: 2 March 2012 / Revised: 2 April 2012 / Accepted: 23 April 2012 / Published online: 10 May 2012

Dear Editor,

Cyclodialysis cleft is the result of separation of the meridional ciliary muscle fibers from the scleral spur. Spontaneous closure of the clefts is rare and seems to occur only in smaller clefts [1]. Following cyclodialysis from blunt trauma to the eye, hypotony can persist and sometimes progresses to hypotony maculopathy. It is thought that a reduction of aqueous production by the ciliary epithelium and cyclodialysis allows aqueous humor to flow into the suprachoroidal space, causing hypotony, ciliary body detachment and sub- sequent maculopathy [2].

Medical management with Atropine eye drops is considered to be the appropriate first-line therapy in all cases. Unfortunately, medical management could be unsuccessful and usually an invasive surgery including suture cyclopexy, [3] scleral buckling, [4] vitrectomy with gas tamponade, [5] have been proposed.

We describe a different approach in the treatment of a traumatic cyclodialysis and a subsequent hypotony maculopathy.

An 18-year-old man with a history of airgun trauma in the right eye was referred to our centre for evaluation. The visual acuity was Count Fingers (CF) and the Intra Ocular Pressure (IOP) was 4 mmHg. The ultrasound Biomicroscopy showed a cyclodialysis cleft and ciliar body detachment extending from 3 to 5 o'clock hours without any injuries of the others eye structures; hyphema and iris dialysis were observed at slight lamp examination. The OCT-scans showed an increased retinal thickness (431 μm) with hypotony maculopathy. (Fig. 1a) The patient was first treated with atropine eye drops, prednisolone eye drops and deltacortene 25 mg/die for 6 weeks, referring to the indications for non-invasive management of traumatic cyclodialysis cleft of less than three clock hours circumference [6].

Despite the medical treatment, no improvements were recorded.

We decided to proceed with an injection of a high viscosity viscoelastic (Healon 5 AMO, Santa Ana, California, USA) in AC located in correspondence of the cleft, surrounded by Viscoat (Alcon, Fort Worth, TX, USA) in order to close the communication between AC and suprachoroidal space.

A therapy of oral Acetazolamide 250 mg 3 times and topical travoprost and apraclonidine has been set up. The IOP rose to 38 mmHg the first night after the surgery and, after 18 days of fluctuation, remained 12 mmHg stably. Together with the normalization of the IOP a decrease of the macular thickness to 238 μm and an improvement of the visual acuity to 20/20 were observed after 4 months. (Fig. 1b).

Cyclodialysis' induced hypotony maculopathy is uncommon and potentially vision threatening complication. Spontaneous closure of the clefts is rare and seems to occur only in smaller clefts. In our case, the cyclodialysis was managed by obstructing the flow of the aqueous humour with the high viscosity viscoelastic. According to the principle of transmission of fluid-pressure (Pascal's law), the pressure exerted anywhere in a confined incompressible fluid is transmitted equally in all directions. Moreover on the walls of the

M. R. Romano · R. Vinciguerra (✉) · A. Randazzo · P. Vinciguerra
Istituto Clinico Humanitas,
Via Manzoni 56,
20089 Rozzano Milan, Italy
e-mail: vinciguerra.riccardo@gmail.com

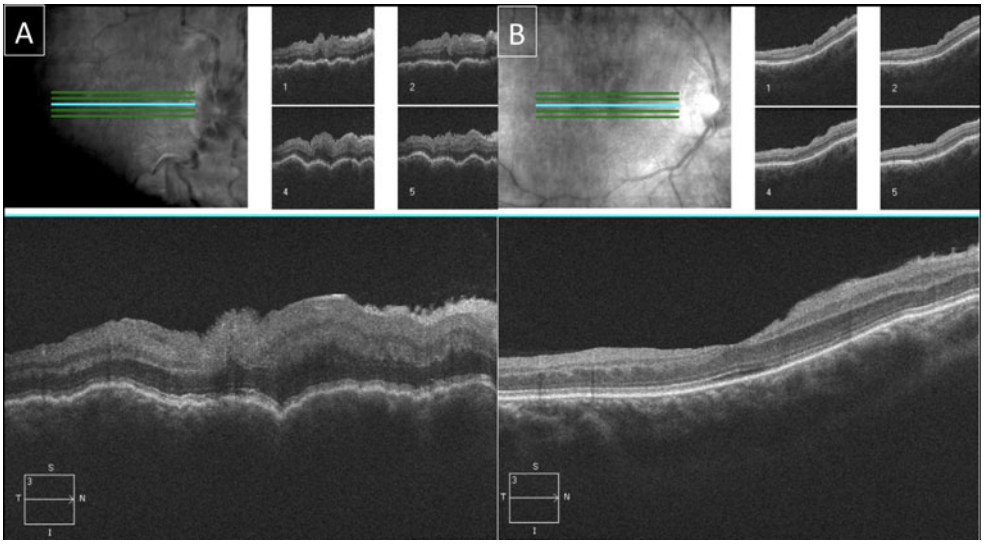

Fig. 1 **a**) Baseline OCT-scans, 2 days after airgun injury, showed 431 μm central retinal thickness with hypotony maculopathy, **b**) Four months OCT-scans showed a complete resolution with a central retinal thickness of 238 μm

container, such force is perpendicular to each point of the wall.

Given the interruption of the communication between suprachoroidal space and the anterior chamber induced by the presence of the high viscosity viscoelastic material, the inner wall of the ciliar body can be considered as part of the "internal wall" of a "high pressure chamber" . The synergy of the rise of the IOP and the interruption of the open communication allowed the closure of the cleft.

Based on our experience, we suggest to avoid invasive procedures, in particular vitrectomy, for the treatment of cyclodialysis cleft unresponsive to medical therapy and to try, as a first line, a mini invasive procedures in order to prevent and cause serious complications.

Acknowledgments A special thank you goes to Dr Claudia Toci for her valuable comments about ocular fluidodynamics and to Marco Carrera for the technical support.

No research funding.

No proprietary interests

Competing interest The authors declare that they have no competing interests.

Consent Mario R Romano, MD PhD that examined the patient, received the informed written consent from the patient for publication of the manuscript and any accompanying images.

References

1. Ceruti P, Tosi R, Marchini G (2009) Gas tamponade and cyclocryotherapy of a chronic cyclodialysis cleft. Br J Ophthalmol 93:414–416
2. Chandler PA, Maumenee AE (1961) A major cause of hypotony. Am J Ophthalmol 52:609–618
3. Rabinowitz M, Khator P, Shah CP, Ichhpujani P, Spirn MJ, Moster MR (2011) Direct cyclopexy with a posterior infusion cannula. Ophthalmic Surg Lasers Imaging 42:175–176
4. Aminlari A, Callahan CE (2004) Medical, laser, and surgical management of inadvertent cyclodialysis cleft with hypotony. Arch Ophthalmol 122:399–404
5. Helbig H, Foerster MH (1996) Management of hypotonous cyclodialysis with pars plana vitrectomy, gas tamponade, and cryotherapy. Ophthalmic Surg Lasers 27:188–191
6. Kumar M, Kesarwani S (2011) Post-traumatic cyclodialysis cleft with hypotonic maculopathy. Clin Exp Optom