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ORIGINAL ARTICLE

Phacomorphic glaucoma. Diagnose and treatment

Considerações sobre o glaucoma facomórfico. Diagnóstico e tratamento

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Abstract

The AA present Phacomorphic Glaucoma discussing the clinic presentation, diagnose and treatment of the disease in four patients.

Keywords: *Glaucoma; Phacoemulsification; Flat anterior chamber*

Resumo

Os AA fazem considerações sobre clínica, diagnóstico e tratamento do Glaucoma Facomórfico, e ilustram com a apresentação e discussão em quatro pacientes.

Descritores: Glaucoma; Facoemulsificação; Câmara rasa

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Introduction

Facomorphic glaucoma requires immediate diagnosis and management because its sudden occurrence often elevates intraocular pressure to an unbearable level.

DUKE-ELDER,[1] in their ophthalmology treaty, said that the most effective for this type of secondary glaucoma often in the presence of crystalline swelling was to reduce pressure with oral acetazolamide (OV), intravenous hyperosmotic solution (EV), followed by the immediate extraction of the crystalline, as the only way to save the eye.

FARR, AK et al., [2] studied 17 patients with cataract after retinopathy of prematurity who underwent phacoemulsification to correct cataract and facomorphic glaucoma, and alerted to the potential intraoperative risk of zonular fragility, in addition to the increased retina detachment in the postoperative period.

Jayaprakasam et al.[3] mention facomorphic glaucoma in a 47-year-old patient who developed new crises of elevated intraocular pressure despite laser iridotomy, which was only solved after removal of the crystalline. These were eyes with axial length (AL) of 24.52 and depth of the anterior chamber (DAC) of 2.78 in the right eye (RE), and AL of 22.58 and DAC of 2.31 in the left eye (LE), and the high myopia of this patient was due to a very high crystalline thickness around 5.33 mm.

Lee et al.[4] observed 10 patients with facomorphic glaucoma and compared the treatment between them. Six received medical treatment, and four underwent argon laser iridotomy; and it showed that those who underwent clinical treatment took 30 minutes to control intraocular pressure, and the the pressure of the 4 patients who underwent laser iridotomy was normalized in only 7 minutes.

Mansouri et al.[5] carefully studied the depth of the anterior chamber in 33 eyes with facomorphic glaucoma, and all showed DAC lower than 2.60 mm.

The objective of the present paper is to draw attention to this rare condition, discuss its physiopathology, as well as suggest the possibilities of treatment.

Case Presentation

Case 1

Female patient 1372, I.A.C., 31y., Single, Brazilian, Psychologist, born in Fortaleza-CE, Brazil, had her first appointment in March 1986 at four months of life, after premature birth with seven months of twin gestation weighing 1.650g. On this occasion, the diagnosis was retinopathy of prematurity presenting: RE, attached retina, falciform fold starting from the papilla leading to the temporal periphery. LE, total inoperable retina detachment.

We chose for the expectant conduct, and did not intervene in any of the eyes.

She returned for appointment in December 1995 and July 1997. On this occasion the refraction of the RE was -1.00sf -0.75cil at 25o, indicating a better corrected visual acuity (BCVA) of 0.1 in this eye.

Temporary living in Portugal, she sought emergency care in Coimbra on 11/01/2017 with an acute intraocular pressure (IOP) of 58mmHg in the RE, her sole good eye, being controlled with the use of hyperosmotic EV drugs and oral acetazolamide.

The examination revealed severe cataract in this eye (Figure 1) and facomorphic glaucoma, very shallow anterior chamber with DAC of 2.33mm CA of 20.30mm, corneal thickness of 481um, and crystalline thickness of 5.33mm. Keratometry was impossible because the cornea was very irregular in its curvature, making the calculation of the intraocular lens (IOL) very difficult even using several formulas available.

The LE was aphakic by reabsorption of the lens, and had the retina attached.

On 11/09/2017, a cataract surgery was performed with a successful IOL implant hypercorrected for near sight (Acrysof SA60AT + 8.0D).

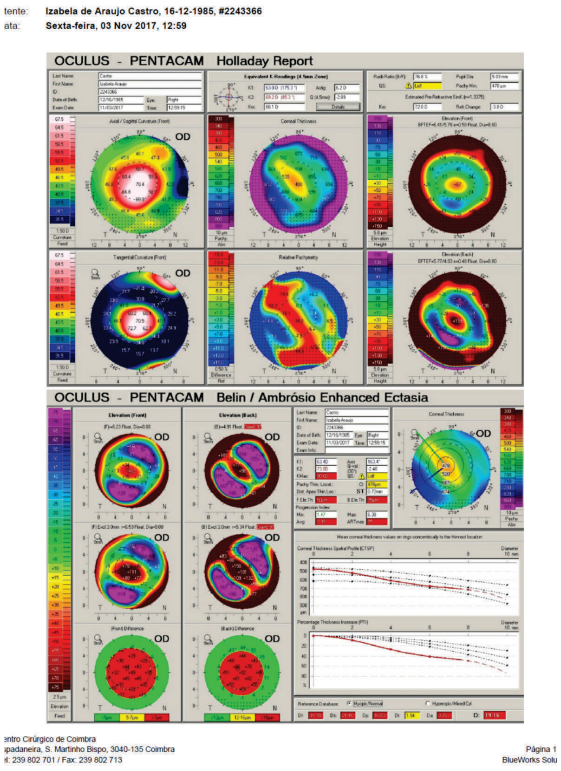


Figure 1: DAC 2.33

Case 2

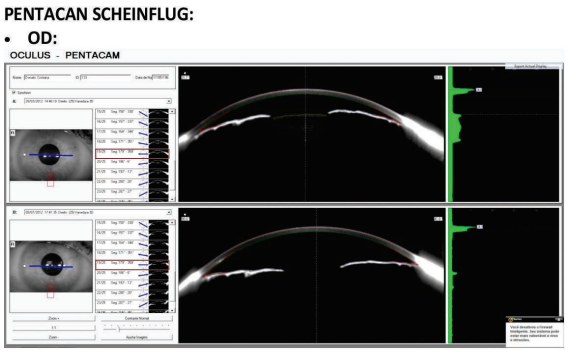
Felame patient 133, C.G.D., 45y., Married, Business Administrator from Barbacena-MG, Brazil, came to us with complaints of acute, intense, and continuous eye pain followed by visual turbidity in the effort to read at night. She denied ocular or systemic pathological history, and presented a family history of glaucoma and cataract.

The test had a BCVA of 1.0 in BA (RE +3.50esf - 0.25cil at 80o and LE +3.25esf -0.50 at 25o). The biomicroscopy showed a shallow chamber in BE, IOP of 12 mmHg in BE, and funduscopy showed increased papillary excavation in BE.

The daily intraocular pressure curve in BE was 14/14mmHg (08:00am), 13/14mmHg (11:00am), 13/12mmhg (02:00pm), 14/14mmHg (05:00pm); pachymetry 0.533/0.529, and gonioscopy showed a narrow angle in BE.

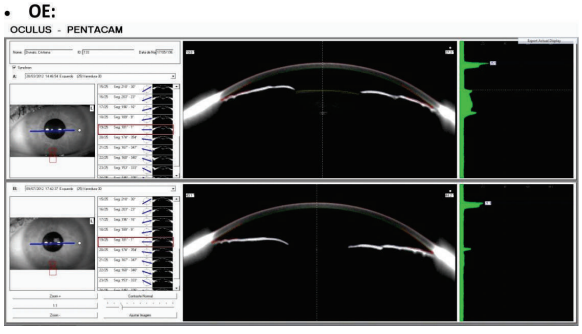
On 03/29/2012, she developed an acute glaucoma crisis in BE (IOP = 46 mmHg BE at 10:00pm), after prolonged reading while the patient was lying down. At that time an iridotomy was performed with Yag-Laser in BE, and the patient developed a new acute glaucoma crisis with IOP of 42mmHg in BE on 04/05/2012 under the same circumstances mentioned above). Phacoemulsification surgery with single-piece IOL Tecnis implant was then indicated (Figures 2,3).

In the postoperative period, the patient presented preserved visual acuity (1.0) in BE and IOP within the parameters of normality. She did not present significant alterations in IOP to date.



PENTACAN SCHEINFLUG comparativo (Pré/ pós-operatório OD):
A) Gonioscopia digital= 27/ 19.3 (Segmento 171-351)
B) Gonioscopia digital = 50/41 (Segmento 179- 359)

Figure 2: Pentacan RE - Pre and postoperative



PENTACAN SCHEINFLUG comparativo (Pré/ pós-operatório OE):
A) Gonioscopia digital= 19.8/23.3 (Segmento 181-1)
B) Goniscopia digital = 40.1/44.2 (Segmento 189-9)

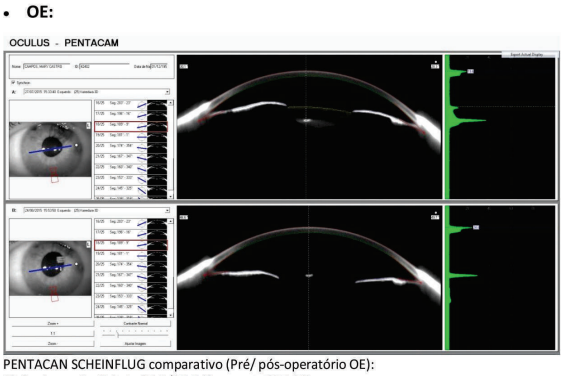
Figure 3: Pentacan LE - Pre and postoperative

Case 3

Female patient 42402, M.C.C., 57y., Married, Civil engineer, born in Belo Horizonte - MG, Brazil, living in Houston, TX, USA, with family history of glaucoma, was referred to our service with history of glaucoma resistant to clinical therapy and surgery; she underwent trabeculectomy in BE 1 year before, maintaining the IOP of 24mmHg (RE) and 30mmHg (LE). At the time, she was using topical antiglaucomatous medication (Timolol Maleate, Dozolamide and Travatoprost).

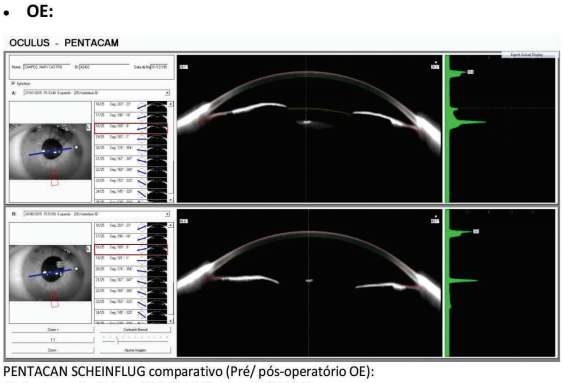
At the examination, the patient had a BCVA of 0.5 in the RE (+ 1.75sf -1.00cil at 180°), and 0.66 in the LE (1.50sf -1.50cil at 170°). The biomicroscopy showed shallow chamber, filter ampoule and iridectomy in BE. The IOP was 24mmHg in the RE and 30mmHg in the LE, and fundoscopy showed increased papillary excavation in BE.

Phacoemulsification with IOL implantation (Tecnis single piece) was performed in BE (Figures 4,5), and in the postoperative period the patient presented improvement of the BCVA to 0.8 in the RE and 1.0 in the LE, the IOP returned to the parameters of normality (14/15 mmHg) in BE without the use of medication, and to date the patient did not present significant changes in IOP.



PENTACAN SCHEINFLUG comparativo (Pré/ pós-operatório OE):
A) Gonioscopia digital= 28.6/17.7 (Segmento225-45)
B) Goniscopia digital = 40.1/44.2 (Segmento 189-9)

Figure 4: Pentacan RE. - Pre and post operative



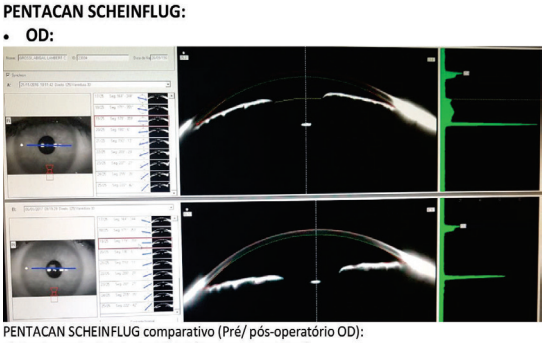
PENTACAN SCHEINFLUG comparativo (Pré/ pós-operatório OE):
A) Gonioscopia digital= 28.6/17.7 (Segmento225-45)
B) Goniscopia digital = 40.1/44.2 (Segmento 189-9)

Figure 5: Pentacan LE. - Pre and postoperative.

Case 4

Female patient 2300, A.L.C.G., 54y., Divorced, Psychologist, born in Barbacena-MG, Brazil, with no ocular or systemic pathological history, sought us with complaint of low visual acuity, visual turbidity, and sudden and transient ocular pain, usually at night. She had a family history of glaucoma and cataracts.

The exam showed BCVA of 1.0 in BE (RE +3.0sf - 0.25cil at 45o and LE +2.25sf -0.50cil at 110o). The biomicroscopy showed a shallow chamber with an IOP of 13 mmHg in BE. Funduscopy showed increased papillary excavation in BE, and gonioscopy showed a narrow angle in BE.



PENTACAN SCHEINFLUG comparativo (Pré/ pós-operatório OD):
A) Gonioscopia digital= 25.2/23.9 (Segmento 179-359)
B) Goniscopia digital =45.1 /47.5 (Segmento 179/359)

Figure 6: Pentacan RE. - Pre and postoperative.

Phacoemulsification with IOL implantation (Tecnis single piece) was performed in BE (Figure 6), and in the postoperative period the patient presented preserved BCVA of 1.0 in BE with IOP within normal parameters (13 mmHg) in BE. She did not show significant changes in IOP to date.

Discussion

Facomorphic glaucoma is a clinical entity very well described in the literature in strong hypermetropic patients with short eyes and shallow anterior chamber. Its control is already established, and can be carried out both with laser iridotomy and with clinical treatment with hyperosmotic drugs and acetazolamide, although it has been shown that laser iridotomy controls the acute crisis of glaucoma faster than the clinical treatment.[1]

However, in 1966, Duke- Elder(1) already stated that the only definite way to save these eyes was by surgically removing the crystalline. Jayaprakasam et al.[3] describe the only publication of facomorphic glaucoma in patients with retinopathy of prematurity and high myopia in the presence of a very thick crystalline of 5.33 mm resistant to treatment with iridotomy following acute glaucoma crisis. In our case, the crystalline thickness was also 5.33mm.

Mansouri et al.[5] studied 33 eyes with facomorphic glaucoma and found all of them with DACs lower than 2.60mm, and there is still the possibility of the intraoperative period showing zonular fragility leading to some intercurrence during surgery.[5]

In case II the iridotomy with YAG was not effective to control glaucoma, and in case III trabeculectomy was not efficient to control the IOP. In both cases, only the surgical extraction of the crystalline was efficient, and therefore in case IV the conduct was strictly to the facectomy and IOL implant.

Conclusion

The first patient is a case of facomorphic glaucoma in retinopathy of prematurity due to the intumescent cataract that led to the high thickness of the crystalline of 5.33mm. The other three cases are typical of facomorphic glaucoma in patients with high hypermetropia. In all cases, only the surgical extraction of the crystalline controlled the IOP.

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