THE MANAGEMENT OF THE PARALYTIC LAGOPHTHALMIA

ANDREEA BOTEZAN [1], ADRIANA STANILA [2], EUGENIA DIANA MIHU [3]

[1,3] PhD candidate Medicine Faculty "V. Papilian" ULB Sibiu,[1]Centre of Research of the Ocular Surface Sibiu
[2]Univ.Prof. Medicine Faculty "V. Papilian"ULB Sibiu

Keywords: *lagophthalmia,lagophthalmic keratophaty, ectropion,tarsorrhaphy,golden plate*

Abstract: *Lagophthalmia is a severe consequence of the facial nerv paralysis that is translated through the imposibility of the oclusion of the palpebral slip.It is an affection extremelly annoying for the patients, in the estetique issues but also in the ocular ones, represented by the irritation phenomena on the ocular surface in variables percentages determined by the oclusion of the eyelids, of alteration of the lacrimal film and of the prolonged exposure of the ocular surface at the environment factors due to the absence of the blinking reflex, with a strong impact on the their life quality and socio-professional integration.This paper studies the therapeutic conduct in the paralytic lagophtalmy from the point of view of the conservatory therapy but also from the point of view of the surgical therapy.*

Cuvinte cheie: *lagoftalmie, keratopatie lagoftalmică, ectropion, tarsorafie, plăcuță de aur*

Rezumat: *Lagoftalmia este o complicație severă a paraliziei de nerv facial ce se traduce prin imposibilitatea închiderii pleoapei superioare. Este o afecțiune extrem de supărătoare pentru pacienți, atât tulburările estetice, cât şi problemele oculare reprezentate de fenomene de iritare ale suprafeței oculare în procente variabile determinate de ocluzia incompletă a pleoapelor, alterarea filmului lacrimal şi expunerea prelungită a suprafeței oculare la factorii de mediu datorită absenței sau reducerii reflexului de clipire, având un puternic impact asupra calității vieții şi integrării lor socioprofesionale. Lucrarea de față îşi propune să abordeze conduita terapeutică în lagoftalmia paralitică atât din punct de vedere al terapiei conservatoare, cât şi al celei chirurgicale.*

SCIENTIFIC ARTICLE OF BIBLIOGRAPHIC SYNTHESIS

Lagophtalmy, term derived from the greek word „lagos" for ,, iepure'', refers to the appearance of the rabbit that sleeps with its eyes wide-open(7). It is defined as the imposibility of the oclusion of the palpebral slip produced by the facial periferic paralysis through the affecting of the orbicularis oculi muscle. Lagophtalmy is the result of the residual effect of the affectation of the VIIth cranial nerve of : congenital (syndrome Moebius) cause; acquired: bell paralysis; vascular lesions; neoplasic; iatrogenic (surgical interventions); traumatic; degenerative affections. Lagophtalmia may be just nocturne ,, sleeps with its eyes incompletely closed'' or it is manifested permanently determining a much more severe sympthomatology.

In the paralytic lagophtalmy the palpebral slip is half-opened, and in the moment when the patient tries to close its eyes, the superior eyelid on the paralysed part falls through its weight, but it doesn't realise the complete occlusion. The ocular globe is deviated upper and forth (Bell's sign). Because of the reduction of the muscular tonus of the orbicular muscle, the inferior eyelid has an easy ectropion and the lacrimal inferior point lossing the contact with the globe, is produced the epiphora. Due to the palpebral inocclusion that is accentuated during the sleep, the cornea moisten is inadequate, will sear, will be desepithelised and in certain situations will determine ulcerations in the inferior third of the cornea (lagophtalmic keratitis). This appears precocious and is more severe when the lesión is situated between the pons of the brain and external geniculate ganglion, producing a turmoil of the lacrimal secretion. The loss of the cornean sensibility indicates an extended lesion of the VIIth and VIIIth nerve with pression on the trigeminal nerve, being a factor of bad prognosis and necessitating an aggressive treatment (8).

The **ophtalmologic management of the patient with paralytic lagophtalmy**

The management of the ocular sequels secondary to the facial nerve paralysis has to be individualised for every patient partly. The patient's age, ocular motility, the production of tears and corneal sensibility has to be taken into consideration in establishing the plan of treatment for the patient with paralytic lagophtalmy. The ophtalmology doctor has to evaluate all the patients with facial nerve paralysis and lagophtalmy. The biomicroscopic exam is used to determine the cornean integrity. The Schirmer tests may be used to measure the tear production.(12) In the situation in which **lagophtalmy is discrete** and there are recovery perspectives, the vitamin cocktails, artificial tears and the eye oclusion during night may be sufficient to maintain the cornean integrity untill the recovery of the palpebral function. The growing of the ambiental humidity helps reducing the symptomatology in the case of the patients that live in regions with an extremely dry air. The artificial tears and the collyrium with antibiotic may be instillated in a few hours in the case of the patients with or at risk, of developing keratopathy. If the **lagophtalmy is more accentuated** and there appear signs of cornean suffering, is necessary a temporary blepharoraphy in the two extern thirds of the palpebral slip. This will be maintained untill it is produced the motor recovery of the orbicular. The injections with botuline toxine may be also used to lower the superior eyelid. Tipically, the superior eyelid is descending few days after the injection of the lifter muscle. There may be necessary a few months for the solution of the induced ptosis.

In the situation in which the **lagophtalmy is persistent and there is no** functional recovery, the surgical

[1] Corresponding Author: Botezan Andreeea Sibiu,7, Turgheniev street; tel. 0744502992; mail: andreea_borezan@yahoo.com
Article received on 03.05.2011 and accepted for publication on 26.09.2011
ACTA MEDICA TRANSILVANICA December 2011; 2(1)207-208

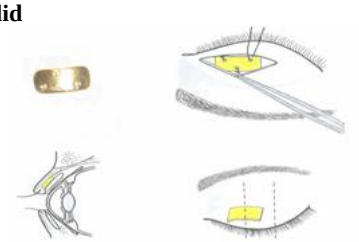
treatment will be chosen, it will be individualised, choosing the technique that is the most suitable to the patient′s needs. The techniques that are used may be divided in ‚static'' nterventions, that influence the dimensión of the palpebral slip, and ‚,dinamic'' techniques, effectuated to improve the mobility and the palpebral occlusion.

„Static''techniques

● **Medial canthoplasty** and l**ateral partial tarsorraphy** narrows the palpebral slip in both dimensions, horizontal and vertical, and also contributes at the suspensión of the inferior eyelid. Extended tarsoraphy, central or lateral, are reserved to the cases with inadecquate Bell phenomena, lacrimal secretion reduced or neurotrophic keratopathy. Those determine the reduction of the visual field and an non-aesthetic aspect.

● **Internal palpebral implants.** At present, the most popular and used static procedure in the lagophtalmic paralysis is the implant of weights at the level of the superior eyelid. Those plates are made of gold or platinum, with a good compatibility regarding the palpebral tissues. The dimenssions of the plate (1-1,2 grams) are tested pre-operatory with the patient sitting. The plate which will be used will be the one that determines the best eyelid closure, but with the reduced ptosis.(9) the plate is fixed at the level of the superior eyelid tras through its three holes after creating a ‚pocket''under the tegument of the superior eyelid.(fig. Nr. 1)

Figure no. 1 The positioning of the implant at the level of the superior eyelid



An alternative at the gold plate, for the patients that are allergic at this matherial,is represented by the platinum, available in shape of rigid implants or in shape of flexible chains that adapt on the curved surface of the tars. The complications of the implant of gold plates are generally minimal. Post-surgery it may appear a slight ptosis of the superior eyelid, but also the plate may transpear in some patients through the thinned orbicular muscle. Sometimes the exteriorisation of the plate through tegument may appear gradually during several months, case in which the implant will be removed and will be reinserted after the eyelid healing.(4)

● External eyelids plates (blinkese external eyelid weights) They are a quick and effective treatment option because it lowers the lid and allow plates a reflex of blinking more easier, assuring a continous protection of the cornea and a stable lacrimal film. It is available a set of probe of plates with different weights (between0,6-1,8 grams) from which the doctor has to choose the plate with optimal weight, that descends the eyelid till 1mm over the cornea and allows an easy blink. The plates are attached at the superior plate with the help of some bands hypoallergenic double adhesive. There are available in different shades of colour, to match perfectly the patient′s skin shade. (6)

„Dinamic'' techniques

● **cerclage with silicone band.** Asilicone band is placed around the superior and inferior eyelid as the superior eyelid passes over the inferior eyelid with 1-2 mm. When the eyelid is lifted by the action of the lifter muscle is created a tension in cerclage. When the lifting is relaxed the stretched cerclage forces the closure of the eyelid.

● the **orthodontic arch.** A piece of wire modelated in the shape of an arch is plased laterally of the superior eyelid. When the eye is open it is created a tension in the wire, and when the lifter is relaxed, the tensionfrom the arch determines the descending of the eyelid.

● the **transfer of the tendon of temporal muscle** The cerclage around the eyelids formed from the tendon of the temporal fascia generates in this case the closure force. When the patient clenches his jaws, using the temporal muscle, the tension at the level of the tendon determines the eyelid closure. The surgery of the inferior eyelid is indicated in patients with ectropion or significant retraction of the inferior eyelid. The correction of the paralytic ectropion may be realised through the Kunt- Szymanovski methods, lateral Bick cantoplasty, „ tarsal band'' Tenzel.(14)

CONCLUSIONS

The treatment of the lagophtalmy and of the exposure keratopathy has to be individualised for every patient.A great variety of technique may be used to assure the palpebral function and ocular comfort, in accordance with the clinical dimensions of the paralysis. Because of the important aesthetic modifications and of the consecutive psychological stress, the cosmetic aspect has to be included in the surgical concept.

„Researches realized during the project POSDRU/CPP107/DMI1.5/S/6851 cofinanced from the Social European Fond through the Operational Sectorial Development Programme of the Human Resources 2007 – 2013"

BIBLIOGRAPHY

1. Baheeran N, Ethunandan M, Ilankovan V. Gold weight implants in the management of paralytic lagophthalmos. I nt J Oral Maxillofac Surg. 2009,38(6):63
2. Pereira MV, Gloria AL. Lagophthalmos. Semin. Ophthalmol. 2010 May; 25(3)
3. Schrom T, Bast F. Surgical treatment of paralytic lagophthalmos. HNO. 2010 Mar; 58(3):279-88;quiz 289-90
4. Dalkiz M, Gokee NS, Aydin A, Beydemir B. Gold weight implantation for rehabilitation of the paralytic eyelid. Int J Oral Maxillofac Surg. 2007; 36: 52
5. Tuna SH, Gumus HO, Hersek N. Custom-made Gold Implant for Management of Lagophthalmos: A Case Report. Eur J Dent. 2008; 2(4): 294-8
6. Berqeron CM, Moe KS. The evaluation and treatment of upper eyelid paralysis. Facial Plast. Surg. 2008; 24(2): 220-30
7. Robert C., Van de Graaf, Frank F.A., I Jpma, and Jean-Philippe A. Nicolai. Lagophthalmos or Hare Eye: An Etymologic Eye Opener. Aesthetic Plast. Surg. 2008 May; 32(3): 57
8. Tratat de oftalmologie. Cernea Paul, 2002, pg 216; 351
9. Ghid de neuro-oftalmologie. Adriana Stănilă, Ioan Ştefan Florian, 2007, pg 116
10. Kanski J.J – Clinical Ophthalmology, 5-th Edition, 2003, 405
11. El Shayly M, Guindi S. Static management of lagophthalmos following facial nerve paralysis using standaralized weights. Rev Laryngol Otol. Rhinol (Bord) 2008 ; 129(4-5): 263-6
12. Schrom T. Lidloading in facial palsy. Laryngorhinootologie. 2007 Sep; 86(9):
13. Custer PL – Ophthalmic management of the facial palsy patient. Semin Plast. Surg. 2004 Feb; 18(1): 31-8
14. Scmitzer S, Pop M, Ungureanu R, Chițac F. Lagoftalmia Paralitică, Metode De Tratament. Oftalmologia. 2004;48(2): 62-4