OPERATION FOR BLEPHAROSPASM*

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BLEPHAROSPASM is an involuntary spasmodic but tonic contraction of the orbicularis oculi that may last a few seconds to a few minutes spaced by periods of relaxation. It tends to become progressive and bilateral and is often associated with spasms of other muscles innervated by the facial nerve. It is difficult to treat and is not subject to spontaneous resolution. The usual medical remedies (derivatives of belladonna, antiparkinsonian drugs, amphetamine, benzedrine, muscle relaxants, sedatives, hypnotics, etc.) have little or no effect, require prolonged administration, and are often badly tolerated because of side-effects. Physiotherapy and psychotherapy have not been found successful. Surgical treatment is more promising, but the effects of weakening the orbicularis muscle or interfering with the facial nerve at different levels are usually only temporary and may be followed by unpleasant complications. The whole subject has been reviewed in detail by Henderson (1956).

In a patient who had been given many forms of treatment without success we have used a surgical method which is efficient, simple to perform, has no secondary effects and offers a key to the pathogenesis of some forms of blepharospasm hitherto regarded as idiopathic.

Case Report

A married female shoe-operative from Bologna, aged 33, whose father had committed suicide by drowning, suffered a head injury at the age of 4 (over the left eyebrow) followed by amaurosis which completely recovered after 4 days. The appendix and right adnexa were removed at the age of 22. Between 1956 and 1959 she had four or five attacks of unconsciousness without convulsions. She also had periodic headaches associated with left palpebral twitching and retching.

She was admitted to the Bologna neuropsychiatric clinic from February 15 to March 4, 1960. A neurological examination was negative, but a depressive psychoneurosis was diagnosed, which was thought to be due to difficult family circumstances. There was partial contraction of the left orbicularis oculi, involving particularly some fibres of the lower lid with moderate ptosis; Ewing's point, the lower maxillary and the trigeminal nerves were painful; the EEG, skull x ray, Wassermann reaction, and Sachs-Witebsky reaction were negative.

Sedative treatment (Fargan, Nozinan), narcoanalysis, and narcotherapy were followed by improvement of the psychological condition and she was discharged with a diagnosis of "reactive psychoneurosis".

In 1961 she came to the ophthalmological clinic. The psycho-depressive picture was accentuated, and she had had episodes of transient blindness with headaches two or three times a month, severe and diffuse paraesthesiae of the limbs, profuse perspiration of the hands and feet, and severe left blepharospasm.

Eye Examination.—The visual acuity was normal with no significant refractive error. Muscle balance was normal. The globes showed no abnormal physical signs. There was moderate facial asymmetry. There were very frequent and rapid tonic-clonic palpebral contractions on the left

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side with a predominant tonic phase, sometimes slightly painful, associated with moderate twitching of the mouth. The contractions appeared immediately on exposure to light (Fig. 1) and on convergence, but not after tactile, acoustic, or olfactory stimuli. The symptoms were relieved by the use of dark glasses. Between attacks the lids appeared almost normal, but with occasional fine fibrillar contractions in the orbicularis oculi. Sensitivity in the region of distribution of the trigeminal nerve was normal on both sides. Neurological, dental, and ear, nose, and throat examinations were all negative; the skull *x* ray showed a mild increase of diploic circulation.

FIG. 1.—Unilateral blepharospasm in December, 1961.

FIG. 2.—Blepharospasm stopped by pressure on left supra-orbital foramen.

Treatment.—March 18, 1961: Nasal tamponage (adrenaline and cocaine) left the blepharospasm unchanged.

March 20, 1961: The left orbicularis oculi was treated with alcohol-novocaine according to van Lint's technique; the spasm disappeared but set in again with the same peculiarities 12 days later.

Massive and prolonged dosage of muscle relaxants (Miolaxene, Tolserol) and neuroplegic therapy Talofen, Antipar) were ineffectual.

Fresh Observation.—October 15, 1961: The blepharospasm was observed to disappear under finger pressure on the left supra-orbital and infra-orbital foramina (Fig. 2), but not under pressure on the left stylo-mastoid foramen or after the instillation of cocaine into the conjunctival sac.

First Operation (December 13, 1961).—A segmental neurectomy of the palpebral branch of the left supra-orbital nerve was performed. After pre-operative novocaine the blepharospasm had already subsided even under the intense light of the operating lamp. The nerve fragment removed showed no significant histological changes.

Result (January 30, 1962).—The patient had no complaints and could do without dark glasses. The orbicular contractions were absent under ordinary conditions, but under intense light and during convergence fine fibrillar contractions were seen in the inner third of the lower lid (Fig. 3, opposite).

These disappeared under finger-pressure on the infra-orbital foramen. There was anaesthesia of the median portion of the left hemifrontal region and median third of the left upper lid and corresponding tarsal conjunctiva. Corneal sensitivity was normal.

Second Operation (February 7, 1962).—A neurotomy of the ascending branches of the left infra-orbital nerve was performed after a Bruns incision. After pre-operative infiltration with procaine, the fine contractions of the inner third of the lower orbicularis oculi did not appear even under bright light or convergence.

Result (March 14, 1962).—The patient had no blepharospasm, did not need dark glasses, and had returned to work. No orbicular contractions were visible. There was anaesthesia of the lower median portion of the left frontal region and of the central third of the left upper lid, with hypoaesthesia of the central third of the upper tarsal conjunctiva, the inner third of the lower lid, and the nose. Corneal sensitivity was normal.

FIG. 3.—Appearance in January, 1962, 48 days after neurectomy of palpebral branch of left supra-orbital nerve.

FIG. 4.—Appearance in February, 1963, 1 year after neurotomy of palpebral branches of left infra-orbital nerve.

Progress.—May 4, 1962: Rare and fine clonic contractions of the left lower eyelid and left half of the lip were again visible, accentuated under intense light. The patient wore dark glasses only occasionally. There was hypo-aesthesia of the lower median part of the left frontal region and of the upper tarsal conjunctiva, and anaesthesia of the central third of the left upper lid. The corneal and mucous-cutaneous sensitivity in other regions were normal. The operation scars were hardly visible.

Partial neurectomy of the left infra-orbital nerve was suggested but the patient refused.

Follow-up (February 1, 1963).—The patient felt well and had had no subjective troubles from blepharospasm since the last examination and no peripheral paraesthesia, and had discarded her dark glasses. No contractions involving the left orbicularis oculi were visible, except that under very intense light fine superficial vermicular contractions appeared in the central third of the left lower lid. These rapidly disappeared (Fig. 4). Cutaneous anaesthesia of the central third of the left upper lid persisted, but the hypo-aesthesia of the left hemifrontal region and of the left conjunctiva had disappeared. The left palpebral fissure was slightly narrower than the right. The upper scar was concealed by the eyebrow, and lower was hardly visible. Both scars were thin, straight, and non-pigmented.

Discussion

This case demonstrates the possible involvement of the trigeminal nerve in so-called idiopathic blepharospasm. The unilateral tonic-clonic twitch in this psychoneurotic woman was not accompanied by anatomical lesions of the globe or adnexa or by ametropia causing accommodative asthenopia. The disappearance of the spasm on pressure over the points of emergence of the supra-orbital nerve and terminal branches of the maxillary nerve, and the relief given by dark glasses, led us to suspect the reflex nature of the lesion, a provocative factor being light, acting perhaps on the palpebral skin or even on the orbicularis itself (the muscular hyperaesthesia of von Graefe, 1854). Interruption of the afferent pathway was obtained by segmental neurectomy of the palpebral branch of the supra-orbital nerve and by neurotomy of the ascending palpebral branches of the infra-orbital nerve. This surgical operation was completely successful. Some regard these trigeminal "pressure-points" as symptomatic of a hysterical condition, but we agree with Fuchs (1889) and Panas (1894) that they point to the reflex type of spasm.

Operations on the trigeminal nerve in cases of blepharospasm were suggested by Romberg (1853), and were performed by Talko, (1870), Quaglino (1871), and A. Graefe (1870). Schweigger (1871) and Schmidt-Rimpler (1888) mentioned these

operations in their manuals, and de Wecker (1879), Fuchs (1889), and Panas (1894) discussed them, pointing out the necessity of sparing the facial nerve to avoid paralysis.

In secondary spastic forms neurotomy has been successfully undertaken of the frontal nerve (Moreau, 1780), supra-orbital nerve (von Graefe, 1854), and supra-orbital and infra-orbital nerves (Nelaton, de Wecker, Tillaux, cited by Testut and Jacob, 1909).

Fuchs (1889) and Panas (1894) recommended neurectomy and this is doubtless the best operation as it leaves no chance of spontaneous regeneration. Neurotomy should be performed only in infra-orbital cases, when contractions of the lower lid are, as in our patient, limited, or when the most of the signs of spasm disappear after the first operation. According to Henderson (1956), 23 per cent. cases of idiopathic blepharospasms are excited by exposure to light: the high frequency of photosensitivity cannot be regarded as merely incidental, but the trigeminal nerve does not appear to be involved in provoking the type of blepharospasm described here.

Summary

A case of reflex blepharospasm is presented wherein neurectomy limited to the palpebral branch of the supra-orbital nerve and neurotomy of the palpebral fibres of the infra-orbital nerve gave lasting relief.

In cases of blepharospasm surgery is suggested when the contractions disappear under finger-pressure exerted over the points of emergence of the branches of the nerve, particularly over the supra- and suborbital foramina.

The operation suggested is easily performed, does not require the hospitalization of the patient, and causes no anatomical or functional damage apart from some small areas of anaesthesia on the skin of the eyelid.

It can be carried out all at once or in two steps. In bilateral cases it should be performed on both sides.

REFERENCES

- FUCHS, E. (1889). "Lehrbuch der Augenheilkunde", p. 539. Deuticke, Leipzig.
 GRAEFE, A. (1870). *v. Graefes Arch. Ophthalm.*, 16, pt 1, p. 90.
 GRAEFE, A. VON (1854). *Ibid.*, 1, pt 1, p. 440.
 HENDERSON, J. W. (1956). *Trans. Amer. ophthalm. Soc.*, 54, 453.
 MOREAU, (1780). Cited by Romberg (1853), vol. 1, p. 290.
 PANAS, P. (1894). "Traité des maladies des yeux", vol. 2, p. 132. Masson, Paris.
 QUAGLINO, A. (1871). *Ann. Ottal.*, 1, 485.
 ROMBERG, M. H. (1853). "A Manual of the Nervous Diseases of Man", trans. and ed. E. H. Sieveking, vol. 1, p. 290. Sydenham Society, London.
 SCHMIDT-RIMPLER, H. (1888). "Manuale di Oculistica e d'Oftalmoscopia", ital. ed., p. 549. Vallardi, Milan.
 SCHWEIGER, C. (1871). "Manuale di Oftalmiatria", ital. ed., p. 199. Vallardi, Milan.
 TALKOW, J. (1870). *Klin. Mbl. Augenheilk.*, 8, 129.
 TESTUT, L., and JACOB, O. (1909). "Traité d'anatomie topographique", 2nd. ed., vol. 1. Doin, Paris.
 WECKER, L. DE (1879). "Thérapeutique oculaire", vol. 1, p. 43. Doin, Paris.