REFRESHER COURSE FOR GENERAL PRACTITIONERS**THE WATERING EYE**

BY

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An eye that persistently waters is not only a social embarrassment which cannot be hidden but in certain cold jobs, such as the handling of fish or meat, it may jeopardize employment. Nowadays there is no need for a patient to tolerate "that long drip of human tears," as most cases are curable by operations based on sound principles of plastic and ophthalmic surgery.

The Lacrimal Apparatus

Tears are produced by the lacrimal gland, which lies tucked away in the upper and outer corner of the bony orbit. From there they pass into the conjunctival sac by way of eight to ten tiny tubules and pour over the cornea: even spreading is ensured by frequent blinking of the lids. The cornea is thereby kept constantly moist, and it is on this moisture that its optical properties depend; dryness of the cornea impairs vision. Also foreign bodies are washed off, and if they are not freely mobile reflex hypersecretion promptly occurs to clear away the offending irritants.

The tears collect at the inner corner of the eye in the lacus lacrimalis and from there they pass into the lacrimal passages. Under normal conditions surface evaporation balances the production of tears and the lacrimal channels of drainage are used for the removal of excess tears. Hence, a patient with blocked lacrimal drainage may be comfortable in a warm room, so long as evaporation can balance production, but out of doors, when evaporation is less than production, the tears will overflow.

The tears pass through two minute openings in the upper and lower lids known as the lacrimal puncta: the lower is the larger and more important for drainage. The puncta open into canaliculi which conduct the tears into the lacrimal sac. This acts as a reservoir on which the contractions of the orbicularis muscle act to express the tears down the naso-lacrimal duct into the nose, where they are discharged under the inferior turbinate into the lower meatus. Expression by muscle contraction, ciliary action, capillarity, and aspiration by blowing the nose all play a part in assisting the downward passage of the tears.

Examination of the Eye

The first step in any eye examination is to survey the patient's face and demeanour. The two eyes should be compared and an artificial eye or slight ptosis noted: both these can be easily missed if only one eye is examined. Next note whether one or both eyes are held closed. Firm closure of both eyes generally denotes a severe corneal abrasion or phlyctenular keratitis, whereas in lacrimal block there is no evidence of discomfort other than the epiphora. Observe the skin of the forehead and lids, bearing in mind the prodromal flush of herpes zoster ophthalmicus, the distribution of acne rosacea, and the red lid margins of chronic blepharitis with secondary eversion of the puncta.

The method of examining a painful eye requires special care if an accurate diagnosis is to be made. It is useless to try to force open the lids of a painful eye against the patient's resistance, and in a penetration injury it may do harm. Patients with eye disorders are usually alert and apprehensive: it pays to reassure them and to tell them of each step in the examination procedure.

Warn the patient that cold drops are to be instilled and that they will sting a little, then gently run in a few drops of 4% cocaine by pulling down the lower lid. Eye-drops can be warmed with advantage. The quickest way to increase lid-spasm is to try to lift the upper lid. Allow five minutes for the drops to act and for the pain to subside, then drop in more cocaine drops from an eye dropper held close to the eye: if the drops are allowed to fall from a height of 2 to 3 in. (5 to 7.5 cm.) the pain will be increased.

It is worth while remembering that to get a patient to keep one eye open he should be told to open both eyes and to look up.

For the actual examination a good light and some form of lens magnification are essential.

Mistakes in the diagnosis of eye diseases are due to lack of observation. It should become a habit to conduct inspection in a systematic manner, beginning with the face of the patient and comparison of the two eyes, then the skin of the lids, the lashes, conjunctiva, cornea, anterior chamber, iris, and so on.

Excessive watering of one eye is due either to hypersecretion of tears or to deficient drainage.

Hypersecretion of Tears

Unilateral hypersecretion is protective in nature and is usually accompanied by pain and some disturbance of vision. It is brought about by a reflex from the eye to the lacrimal gland by way of the first division of the fifth cranial nerve. The initial local stimulus to hypersecretion is commonly due to one of the following causes (see Fig. 1).

Corneal Abrasion

When the superficial layers of corneal epithelium are stripped off by a glancing blow the free nerve endings are exposed and intense pain results. Such an abrasion is often caused by a twig, the flailing arms of an infant at the breast, or a flick when combing the hair. The pain is out of all proportion to the severity of the injury and the eyes are kept tightly closed from intense photophobia.

The diagnosis can be made on the history and the appearance of the patient. Drops of 4% cocaine should first be instilled as described above to ease the pain: a drop of 2% fluorescein will then show the area of the abrasion, and careful search should be made to determine whether a foreign body is also present or not. Liquid paraffin and pencillin drops (3,000 units per ml.) are instilled and the eye is kept covered by being firmly

tied up for 48 hours. In severe abrasions both eyes are covered to stop eye movements. If the eye is undisturbed pain is relieved and the corneal epithelium heals rapidly; an uninfected abrasion is often cured overnight. If the abrasion becomes infected a corneal ulcer results (see below). Increasing pain, redness of the eye, infiltration, and loss of lustre of the cornea indicate infection.

Foreign Body

This may lie under the upper lid, which will press it against the cornea and cause severe pain, or it may be embedded in the superficial layers of the cornea. Deep foreign bodies and deep corneal wounds do not usually cause watering or much pain.

A few drops of 4% cocaine should be instilled and good focal illumination used to inspect the cornea and the everted upper lid. The foreign body should be

FIG. 1.—Common causes of reflex hypersecretion of tears.

removed by a moist wisp of cotton-wool on a cherry-stick or by a sterile sharp needle. Blunt corneal spuds are not suitable, as they traumatize the tissues. Good cocaine anaesthesia is essential.

If the foreign body is recent and the eye is not injected penicillin drops and liquid paraffin should be instilled and the eye tied up for 12 hours. If the foreign body has been present for some time, and infection is present as signified by pain, corneal haze, and redness, the condition should be treated as a corneal ulcer.

Corneal Ulcer

An ulcer may cause epiphora, but this will depend on its depth. Deep ulcers cause little watering of the eyes, but those which lie in the superficial layers, as in phlyctenular superficial punctate or neurotropic keratitis, are generally accompanied by epiphora and photophobia due to involvement of the free nerve endings near the surface of the cornea. The local treatment of a corneal ulcer includes 1% atropine either by ointment or by drops, and penicillin or streptomycin drops. Moist heat will relieve pain and is best applied by means of a wooden jam-spoon around which a few thicknesses of gauze or lint have been tied. The spoon should be soaked in a basin of hot water and applied to the closed lids for frequent sessions of twenty minutes' duration. Dry electric pads are also useful and keep down swelling of the lids.

If with these measures the ulcer does not improve in four to five days it should be gently curetted, under cocaine anaesthesia, and touched with pure carbolic acid. Resistant and deep ulcers require the electro-

cautery, protein shock, subconjunctival injections of penicillin or streptomycin, and paracentesis of the globe. An eye with a corneal ulcer should be kept firmly tied up with a pad so as to prevent irritation by lid movements. The exception is when there is considerable conjunctival discharge: dark glasses with side-pieces are then used instead of a pad.

The general treatment of a case of severe or recurrent corneal ulceration should include full vitamin therapy, the investigation and treatment of closed focal sepsis, and attention to general hygiene.

Conjunctivitis does not cause watering of the eye, but it does cause sticky lids from discharge. It is a first principle of eye treatment that a discharging eye should never be tied up: such an eye is protected by a loose lint-flap or dark glasses. To restrict free elimination of conjunctival discharge by pads is to invite an increase of the infection by raising the temperature of the conjunctival sac.

Aberrant Lash

Occasionally a lash becomes misplaced and grows towards the eye instead of away from it. In an adult a short stiff lash may cause much epiphora by scratching the cornea, and careful search and good illumination are required to detect it. When only one or two lashes are at fault treatment is by electrolysis and epilation. When many lashes turn in without much lid distortion (trichiasis) a free mucous-membrane strip-graft, from the buccal mucosa, inserted behind the line of the lashes will deviate them outwards in the proper direction. When the lid itself is distorted and either falls away from the globe (ectropion) or rolls in against it (entropion) the normal position of the lid can be restored by plastic procedures which tighten and support the arc of the lower lid.

Occasionally an attack of herpes zoster ophthalmicus or iritis is ushered in by unilateral reflex epiphora. Generally, however, there is concomitant severe and deep-seated pain centred in the globe and radiating along the first and second divisions of the fifth cranial nerve. Vision is also disturbed.

A tiresome condition known as recurrent erosion of the cornea is occasionally encountered. After the patient has had a corneal abrasion which has healed there may be, some weeks later, a sudden and severe recurrence of all symptoms. Acute pain in the eye occurs on waking, and examination shows that a further abrasion of the corneal epithelium is present on the site of the original lesion. It is possible that the lid sticks to the new epithelium of the healed abrasion and strips it off when the lids are opened.

If this condition recurs more than once the area of the abrasion should be firmly curetted and carbolyzed. As a prophylactic in healed cases of corneal abrasion one drop of liquid paraffin should be instilled every night for two months after the abrasion has healed.

Bilateral Epiphora due to reflex irritation does not usually present difficulty in diagnosis when there is a history of exposure to irritant vapours, ultra-violet radiation, or sprays. Occasionally superficial punctate keratitis may cause long-continued irritation and bilateral epiphora. In such a case the cornea is sprinkled with minute superficial ulcers which can be seen only by high magnification. There is intolerance of light and epiphora, some conjunctival injection, but no sticking of the lids. This disease is thought to be due to a virus and can be very resistant to treatment.

There is evidence that aureomycin and the antihistamine remedies such as "antistin-privine" drops or tab. "thephorin" are useful. For stubborn cases superficial x-irradiation of the cornea has been tried with success.

Deficient Drainage of Tears

Obstruction anywhere along the lacrimal drainage channels (Fig. 2) will cause a watering eye. Obstructive epiphora differs from reflex epiphora, as it occurs in a white eye free from pain and photophobia.

FIG. 2.—Sites of obstruction in lacrimal block.

Eversion and/or Stenosis of Inferior Lacrimal Punctum

The inferior punctum conducts 70% of the tears reaching the lacus lacrimalis into the drainage channels; the opposite superior punctum is of smaller calibre and of less use. Normally the lower punctum points backwards to the eyeball and is out of sight; it dips into the lacus at the inner canthus, where it sucks up the tears. If it can be seen, it is abnormal and out of position (eversion); it can no longer drain the tears.

Eversion of the punctum is the commonest cause of senile epiphora and is due to loss of tone of the lid musculature, which allows the lid to sag away from the eye. The lid is still further dragged down by constant wiping of the eye downwards, and secondary ectropion is thereby added. In young people eversion is commonly associated with chronic blepharitis and adds secondary epiphora to infection of the lids.

If the punctum has a good aperture it can be restored to its proper position by three or four deep electrocautery applications below the punctum on the conjunctival side of the lid. The resulting scar will roll the punctum over by subsequent contraction. If, however, the punctum is stenosed or the canaliculus is narrow the opening must be enlarged by removing the posterior wall of the canaliculus (three-snip operation) so as to convert the canaliculus into an open gutter. Again, if a facial scar is pulling down the lower lid, or the weight of the lid has caused it to drop, more extensive plastic procedures such as a graft inlay to support the lid will

be required. Careful inspection will sometimes show the impaction of a lash in the punctum or a streptothrix concretion in the canaliculus.

In facial paralysis, when the lower lid drops, not only is the punctum everted but the tears are shunted to the outer half of the conjunctival fornix. Much relief of epiphora is afforded by slinging up the outer half of the lower lid (lateral canthoplasty) and thus diverting the tears to the inner angle, where they are picked up by an enlarged opening in the inferior punctum. Neither of these two operations alone will afford relief, but the combination is very effective.

If the inferior canaliculus has been destroyed by accident but the superior canaliculus is intact, relief of epiphora is obtained by slitting open the lateral wall of the lacrimal sac so as to open it into the conjunctival fornix (cantho-cystostomy). Drainage is then direct into the sac from the conjunctiva.

Main Naso-lacrimal Block

The sac and main duct are about 1 in. (2.5 mm.) long and run from the lacrimal fossa to the inferior meatus of the nose; the middle meatus is a medial relation and the antrum is on the outer side. There are two common sites of obstruction—namely, where the sac joins the duct and passes into bone, and at the termination of the duct where it emerges under the root of the inferior turbinate bone. Obstruction dams up the tears and they accumulate in the sac: the sac distends, becomes atonic, and infection supervenes. This is indicated by watering and the regurgitation of pus and tears into the conjunctiva when the sac is pressed against the lacrimal bone (dacryocoele). In some cases an acute abscess forms and bursts through the skin. In chronic or traumatic cases x-ray examination after the use of oleum iodisatum will determine the level of the obstruction.

If an infant's eye persistently waters from the age of 3 weeks, when the tears begin to flow, the cause is generally delayed canalization of the naso-lacrimal duct or, more rarely, absence of the entire lacrimal passages. Canalization takes place from the nose and eye simultaneously, and sometimes a diaphragm persists which obstructs the free flow of tears. Such an infant should be treated conservatively for six months, by gentle pressure on the sac and the use of penicillin drops or sterile saline lotion to combat secondary conjunctival infection. About 90% of cases are cured by these measures alone and by the coincident growth of the skull. If, however, there is no improvement by the end of six months a very small greased probe should be passed with great care under general anaesthesia, along the naso-lacrimal duct. Once is usually enough to cure the epiphora.

When there is main-duct block in an adult the modern treatment is to make a short-circuit between the sac and the middle meatus of the nose above the level of the obstruction by drilling a hole through the lacrimal bone. Relief of epiphora by this operation (cysto-rhinostomy) is obtained in 80% of cases. The use of probes or styles is ineffective as a permanent cure of main-duct block in adults. As a result of the high rate of success of cysto-rhinostomy, excision of the lacrimal sac as a method of curing epiphora has now been abandoned except in elderly people whose life is mostly spent in warm rooms. Excision of the lacrimal sac has always been illogical, but it gave partial relief by the removal of a suppurating source of irritation; some degree of epiphora, however, always remained. Causes of main-duct block in the adult are chronic infection of the mucosa of the duct,

fractures of the face involving the lacrimal duct, low intranasal infections, and neoplasm of the wall of the antrum.

If the lacrimal sac has been removed, or destroyed by irradiation of an adjacent rodent ulcer, drainage into the nose can be re-established by means of a free mucous-membrane tube-graft from the inner canthus of the conjunctiva to the middle meatus of the nose (cantho-rhinostomy). The tube measures 1 by $\frac{1}{2}$ in. (2.5 by 1.25 cm.) and is constructed from buccal mucosa: it passes through a stab incision at the inner canthus into the nose and is temporarily held in position by a catheter. Relief is obtained by this operation in over 60% of patients for whom there had previously been no relief except by removal of the lacrimal gland (adenectomy), an operation of doubtful value and of unpredictable result.

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PERSONALITY CHANGES IN PITUITARY DISORDERS

PROFESSOR MANFRED BLEULER'S LECTURE

Under the auspices of the Institute of Psychiatry a lecture was given at Maudsley Hospital on February 14 by Professor Manfred Bleuler, of the University of Zurich, on the psychiatric and genetic aspects of acromegaloïd conditions.

The knowledge of the psychopathology of pituitary conditions, said Professor Bleuler, was very incomplete. The literature contained many descriptions of isolated observations of mental derangement, but the conclusions drawn were often contradictory and confusing. A systematic survey of a large number of pituitary patients of psychopathic personality and the correlation of their behaviour with their endocrine make-up had never been attempted with modern psychiatric techniques. The psychiatrist as a rule saw only a small selection of pituitary cases. In his own psychiatric clinic during the last eight years a study had been made of 29 patients with acromegaly and 1,430 of their relatives, and of 107 patients with acromegaloïd features and 8,022 of their relatives.

The Acromegaloïd Personality

The occurrence of schizophrenic, manic-depressive, or epileptic psychoses with acromegaly had been seen only exceptionally. Among the relatives of the 29 acromegalic patients these three types of psychosis were no more frequent than in the average population of Switzerland. It was true, however, that persons with acromegaly were frequently mentally affected; they were quite often dull and apathetic, and a man who had been able and active in his early life might abandon all his former interests. A characteristic feature of pituitary disorder was a general slowing of psychological function: the trend of thought was apt to be pedantic, tiresome, circumferential, monotonous. He described one girl who had formerly been active and happy as having changed "from a busy bee to a slow snail." Nearly all acromegaloïds lost their objective and altruistic interests and became egocentric and in the family group likely to be "bossy," tyrannical, and intolerant. Frequently there was mental disturbance of short duration but with a tendency to recurrence, irritable moods with outbursts of violent temper, or increased apathy and laziness. Patients had spells of forgetfulness, followed sometimes by intense awareness. One student who had not reacted for many months to an invitation to a psychiatric examination telephoned at 11 o'clock at night that he must come immediately

for the interview. There were periods of unnatural hunger and thirst, frequently accompanied by headache. The patients themselves realized that their moods and impulses were strange, but they tended to enjoy their apathy, feeling themselves to be philosophers perched high above the storms and stresses which beset common men.

Lactogenic Hormone and Maternal Attitudes

The psychopathological features of Cushing's disease fitted into the description of the syndrome, though in Cushing's disease the mood-swings were more severe. In some rare cases of acromegaly it was possible to distinguish the psychological effect of a single pituitary hormone other than the growth hormone. The lactogenic hormone had a wider role than its name implied. It had an effect on somatic function and on instincts related to the care of the young. Professor Bleuler related the case of a police officer, a man of active and rather aggressive type, who had acromegaly in a mild form. At the age of 31 he noticed milk spouting from his breasts when he touched them, and on his relating this to someone the other made a foolish jest about maternity. The man's interests thereupon changed in the direction of the maternal, his male attitudes disappeared, he took care of his own infant like a nurse, and adopted two other small children. His personality change was such that his wife asked for a divorce. When the milk secretion was stopped by the administration of testosterone propionate his personality reverted to normal. It would be foolish to claim, nevertheless, that the lactogenic hormone was the cause of maternal feeling in the human. Maternity had much more to do with the whole personality than with the endocrine system. It was also developed by the sublimation of primitive impulses quite independently of the hormones.

In many endocrine diseases there seemed to exist an intelligible link between somatic and psychological derangement. In thyroid disease, for example, the metabolism was affected in the same way as the nervous and psychological activity. Acromegaloïd derangement meant unnatural growth in many parts of the body, particularly those which had to do with the realization of instinctive urges, such as the lips and tongue, the genital organs, and the hands and feet. But one should not seek to explain the somatic condition by the psychological state, nor vice versa. Somatic and psychological manifestations were probably two sides of a single problem.

The endocrine changes in the acromegaloïd were of the same kind as in acromegaly, but in much less degree. The pathological anatomy of the acromegaloïd constitution had not yet been worked out in humans, but some correlation had been established between this constitution and the psychopathic personality with the somewhat apathetic and irresponsible attitude, the characteristic short mood-swings, and the occasional hunger and thirst of a pathological kind.

Voltaire's Behaviour

The lecturer cited Voltaire (1694-1778), whose influence on his century had been outstanding, as an acromegaloïd personality. His features and the contemporary descriptions of his appearance suggested this. He was a man of extreme contradictions. Throughout his life he suffered from spells of complete loss of emotional control, giving himself over to vanity, vengeance, foolish generosity, and childish fears, his behaviour often presenting a striking contrast to his usual humane attitude. He was accustomed to wreaking childish mischiefs even after he had attained world-wide fame. Some of his exploits recalled those of a child after encephalitis. On one occasion he pretended to be dying in order to make fun of the priest who administered the sacrament. He was subject to moods, sentimentality, and hypochondriasis. At times it might have been supposed that he was possessed by diabolic spirits. As a whole Voltaire's personality fitted well into the acromegaloïd syndrome.