the contact lens case and the contact lens solution revealed the presence of *Pseudomonas aeruginosa* which was sensitive to tobramycin and cefazolin. Accordingly, the patient was started on 5% cefazolin sodium and 1.3% tobramycin sulphate eye drops 2-hourly along with topical cycloplegics.

As the ulcer remained static, repeat multiple scrapings from the edge of the ulcer were carried out and the specimens sent for microbiological evaluation in blood agar medium for bacteria, Sabouraud's agar medium for fungi and non-nutrient agar medium lawned with *E. coli* for *Acanthamoeba*. Both bacterial and fungal cultures were negative while the non-nutrient agar medium showed growth of *Acanthamoeba*. Further, the additional specimens sent from the contact lens case, contact lens solution and bandage contact lens for *Acanthamoeba* cultures were negative. Polyhexamethylene biguanide (PHMB) 0.02%, Golden Eye Drops (Brolene) 1% and aprotinin 40 IU/ml were added to the therapy regimen at 1-hourly interval for 3 days and then reduced to 6-hourly. Both PHMB and aprotinin eyedrops were constituted at our Ocular Pharmacology Section.

The ulcer showed regression with this therapy and complete clinical healing occurred within 25 days. Post-resolution visual acuity was 1/60 at 6 months, which further improved to 2/60 at 1 year. The patient is being followed up at regular intervals. No recurrence of the ulcer has been observed after 2 years. However, there was no further improvement of vision.

Comment

Acanthamoeba keratitis is a potentially devastating condition which, if not diagnosed early and treated effectively, leads to loss of an eye.² Isolated cases following radial keratotomy and keratoplasty have been reported.^{1,3,4} Recurrence of *Acanthamoeba* keratitis, though known following therapeutic keratoplasty, has been reported only once in an optical graft. This is the second report in an optical graft in the world literature, and the first report from India. To our knowledge there are no studies on microbial contamination of lens care accessories or their relation to lens care practices in an Indian setting. However, one patient tested *Acanthamoeba* culture-positive amongst hard contact lens wearers.⁵

Causes of graft infection as reported earlier are exposed suture, contact lens wear and epithelial defect. Our finding could not pinpoint a single factor as the patient had a loose suture, a persisting epithelial defect and was using a bandage contact lens. To this an additional fourth factor could be grafting in a compromised cornea, i.e. in a case of healed herpes simplex keratitis. We are in agreement with William *et al.*⁶ who commented that delay in healing in a patient with herpes simplex keratitis may indicate the association with *Acanthamoeba*. Thus, we suggest that though bacterial keratitis in a corneal graft is more frequent than other infections, corneal surgeons should

keep the possibility of *Acanthamoeba* keratitis in mind, particularly in patients who undergo keratoplasty for HSV infection.

Further, the treating ophthalmologist should remain alert to an *Acanthamoeba* infection even in a proved case of bacterial keratitis, especially if the infection remains static despite effective therapy, as it happened in our case.

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Sir,

Mucocele arising from a lateral extension of a sphenoid sinus

Mucocele are uncommon especially in the sphenoid sinus and a mucocele arising from a lateral extension of a sphenoid sinus is previously unreported. They may elude diagnosis for some time. In view of their propensity to give rise to complications, such as orbital cellulitis in our case, they invariably require surgery by the time of presentation.

Case report

A 17-year-old girl presented with a 3 day history of an upper respiratory tract infection, right frontal headache radiating to the ear and jaw and, on the day of presentation, right upper lid swelling, pain on ocular movements and blurred vision. She had had seven previous episodes of upper lid swelling followed by conjunctivitis and blurred vision lasting 1 week. This was

treated by her GP with antibiotic ointment. There was no history of trauma but she had frequently had nasal stuffiness and seasonal rhinitis.

Snellen visual acuity was 6/24 in the right with colour desaturation and 6/5 in the left. Extraocular movements were full but caused pain in the right eye and diplopia in right gaze. The right upper lid and right upper face were swollen with focal tenderness over the right maxillary and both frontal sinuses. Her temperature was 38.4 °C. A diagnosis of orbital cellulitis secondary to sinusitis was made and intravenous cefuroxime and metronidazole with analgesia and nasal decongestants were given.

A CT scan revealed a large encysted lateral extension of the right sphenoid sinus occupying almost the entire greater wing of sphenoid, which was massively expanded. There was displacement of the cavernous sinus and internal carotid and proptosis with signs of intraorbital infection (Fig. 1). The right sphenoid sinus was small and there was a bony, but not obviously a mucosal discontinuity between the sinus and the presumed mucocele.

Two days later she was afebrile. The lid swelling had improved but vision was unchanged. Therefore she underwent surgical decompression of the mucocele. It was approached via the inferotemporal fossa after downward displacement of the zygomatic arch. A burr hole was made through the greater wing of the sphenoid about 2 cm below the pterion. The cyst contained turbid, uninfected fluid. The cavity's relation to the nose was determined by passing an illuminated endoscope into the nose and a communication was made between the cavity and nose just behind the posterior end of the inferior turbinate. A Silastic tube was coiled within the cavity and the other end left accessible in the floor of the nose.

By the second post-operative day the vision was 6/5 and colour saturation was normal with a full range of extraocular movements and no diplopia.

Seven months later the tubing was removed. Sixteen months later the patient complained of discomfort on the left side. A CT scan revealed that the mucocele had been largely replaced by medullary bone.

Comment

Mucocele of the paranasal sinuses are uncommon. They result from blockage of the normal drainage of a sinus due to infection, trauma or tumour. Evans¹ reviewed 46 patients with mucoceles and found that 30% had no preceding nasal symptoms; amongst the remainder, 2 had allergic rhinitis as in our case, but the enormous prevalence of this in the general population does not allow an aetiological association with mucoceles.

Characteristically, a mucocele slowly expands causing erosion and thinning of the surrounding bone with displacement of adjacent structures and can lead to compression of surrounding structures. Only CT scans can delineate mucoceles accurately.² Sphenoid sinus mucoceles are rare and represent 10% of all mucoceles.^{3,4} They give rise to ill-defined symptoms such as poorly localised headache and nasal pain. Later, proptosis, diplopia and visual field loss may occur. The sphenoid sinus is very variable in size and may be associated with lateral extensions into the clinoid processes, lesser or greater wings of sphenoid.⁵ Recesses in the greater wing may be of considerable extent. A mucocele of a lateral recess of a sphenoid sinus has not previously been reported. When erosion exposes the periosteum, mucoceles may leak giving rise to inflammation in the orbit, proptosis and associated visual loss.⁶ This may progress to or present as orbital cellulitis.

Sinusitis is the commonest source of orbital cellulitis. An orbital abscess always requires drainage. A mucocele requires drainage with stenting to prevent recurrence. Functional endoscopic sinus surgery is an endoscopic approach allowing direct visualisation of the anatomy of the lateral nasal walls and interior cavities of the sinuses

Fig. 1. (a), (b) Coronal CT sections of skull base and sinuses show a large fluid-filled expansion within the greater wing of sphenoid and a narrower fluid-filled right sphenoidal sinus. The floor of the right middle cranial fossa is raised and the pituitary fossa is shifted to the left.

and is now widely used in nasal and sinus surgery. In this case an endoscope was used to ensure the correct route for marsupialisation of the cyst into the nose via the craniectomy, but would have been inappropriate to approach the mucocele itself because of the distorted anatomy in the area and the displacement of the cavernous sinuses and contents in an already inaccessible area of the nose. It was thus safer to approach this case externally.

Non-specific symptoms and difficulty of diagnosis by radiography often lead to a delayed diagnosis.⁷ It can be expected that a mucocele from a lateral recess would be even less amenable to early diagnosis, exemplified by recurrent episodes of orbital cellulitis in our case. Also isolated cases of sphenoid sinusitis as demonstrated by CT scan in this case (Fig. 1) are rare. It is not possible to determine the relative contribution of this infection versus the mucocele with respect to the likely cause of the recurrent orbital cellulitis and orbital cellulitis associated with a sphenoidal sinus mucocele has not been previously reported.

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Sir,

Aberrant lacrimal gland within the tarsal plate presenting as hyperlacrimation

An aberrant lacrimal gland is defined as the presence of lacrimal gland at any site outside the lacrimal fossa.¹ Aberrant lacrimal gland has been reported within muscle cone,² in the ciliary body,³ within the bulbar conjunctiva⁴ and at other sites. Depending on the site of aberrant lacrimal gland, the presenting complaint includes proptosis,⁵ glaucoma³ or a lump on the bulbar conjunctiva. Occasionally these aberrant glands can develop into pleomorphic adenoma or adenocarcinoma. If the aberrant lacrimal gland is associated with

Fig. 1. A tear drop appearing at the right upper lateral lid margin, which gradually increased in size over a 1 min period.

congenital lacrimal fistula then hyperlacrimation can occur. We report a rare case of aberrant lacrimal gland with fistula originating within the tarsal plate. This is believed to be the first case ever reported at this site.

Case report

A 15-year-old girl presented to our clinic with the symptom of persistent watering from her right eye since birth. The flow of tears was aggravated by cold wind, conjunctival irritation and emotion. This had resulted in frequent excoriation of her right cheek. Her main concern at presentation was that she was unable to put on make-up as it kept being washed away by the flow of tears. The patient had had nasolacrimal probing when she was 1 year old with no benefit. She had had a sac washout performed at 10 years of age which showed patency of the canaliculi and nasolacrimal duct.

Clinical examination revealed a duct opening in the lateral upper lid margin behind the eyelashes (Fig. 1). The duct constantly secreted tear fluid and then dripped down onto her right cheek. The rest of the right eye and the contralateral eye were normal.

The duct was probed and retrograde injection of radio-opaque contrast medium showed a fistula travelling up the height of the upper tarsal plate. A further gallium-67 uptake study showed a normal lacrimal gland bilaterally with no separate focus.

Fig. 2. Levels of histological sections in Fig. 3a-d.