IOP decreased to 4 mmHg. The AC depth was noted to shallow by 50%. The peripheral iridotomy (PI) was clearly patent and peripheral enough to prevent pupil block. On review the following day the AC was almost flat; however, no corneal-lens implant touch was noted. The IOP remained low at 5 mmHg but the filtration bleb was noted to have decreased in size. Intensive dilation and cycloplegia with G Cyclopentolate 1%, G Phenylephrine 10%, and G Atropine 1% had no effect on AC depth although the IOP rose to 8 mmHg over the next 5 days.

Although the IOP remained stable, subacute aqueous misdirection was suspected. Peripheral capsulo-hyaloidotomy was performed with Nd:YAG laser through the surgical PI. The Nd:YAG aiming beam was focused at and behind the zonules adjacent to the ciliary processes. Sequestered soft lens matter (SLM) from previous extracapsular cataract surgery was visible in the PI. An immediate flow of fluid from the vitreous cavity to the anterior chamber could be seen by observing the movement of particles of sequestered SLM carried in the stream of fluid. The AC deepened within 30 min and had returned to its normal depth the following day. Over the next 2 weeks the IOP rose to 28 mmHg. A further needling procedure was successfully performed in the operating theatre. The IOP remained stable below 18 mmHg during 4 months of follow-up.

Comment

Aqueous misdirection has been associated with most types of intraocular procedure. To our knowledge this has not been previously reported in association with needling of trabeculectomy blebs. Aqueous misdirection should be suspected in cases with shallow AC even before an increase in IOP occurs. It has also been shown that the assessment of IOP in eyes with flat anterior chambers can be inaccurate.⁷

This patient had several risk factors for aqueous misdirection: (1) a short axial length at 21.8 mm; (2) sequestered SLM in the capsular bag obstructing the surgical peripheral iridotomy performed at the time of trabeculectomy; (3) reduction in AC depth from initial transient over drainage following the first needling procedure. These factors led to progressive shallowing of the AC as a result of aqueous misdirection. A reversal of this process was successfully achieved by Nd:YAG laser capsulo-hyaloidotomy.⁸

Although a relatively safe procedure, clinicians should be aware that bleb needling can lead to potentially serious complications including aqueous misdirection, which has not previously been reported.

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Sir,

Systemic side effects of topical latanoprost

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Latanoprost, a prostaglandin analogue (PGF_{2α}), is a commonly used antiglaucoma medication.¹ As plasma concentration is low following topical administration,

systemic adverse effects are unlikely to occur.¹ Studies carried out in asthmatic volunteers with topical prostaglandin PGF2 α did not show any respiratory side effects.² Systemic administration of PGF2 α has significant cardiac effects^{3–5} and it has a role in the mediation of sensory (pain) perception.⁶ Such side effects have not been reported with topical use. We report five cases of chest tightness following the use of latanoprost eye drops.

Case reports

Case 1 A 73-year-old lady with primary open-angle glaucoma had therapeutic failure with several antiglaucoma medications. In view of inadequate control of intraocular pressure and undesirable side effects to β -blockers, brimonidine and dorzolamide, she was given latanoprost (Xalatan® Pharmacia) eye drops as monotherapy. She complained of chest tightness following 1 month of Xalatan therapy, which was persistent. Although there was no objective evidence to suggest cardiac ischaemia, the symptoms subsided on discontinuation of the drug.

Case 2 A 67-year-old hypertensive lady with valvular heart disease and bilateral primary open-angle glaucoma was started on Xalatan eye drops. She reported chest tightness for a week following 12 months of uncomplicated use of Xalatan. The symptoms settled after 1 week and she was able to continue Xalatan with no further problems.

Case 3 An 82-year-old male, insulin-dependent diabetic with bilateral primary open-angle glaucoma had respiratory side effects to β -blockers. He was switched to Xalatan monotherapy. He developed chest tightness 3 days following commencement of therapy. The symptoms settled after 1 week. He has continued to take Xalatan and has not complained of similar symptoms since then.

Case 4 An 89-year-old hypertensive male with primary open-angle glaucoma was started on Xalatan, after developing side effects with timolol and brimonidine eye drops. He developed chest tightness on and off after commencing Xalatan eye drops, which disappeared after 2 months. He has been on Xalatan eye drops for a further 2 years without chest symptoms.

Case 5 An 81-year-old lady with primary open-angle glaucoma was started on Xalatan after developing respiratory side effects to β -blockers. She developed chest tightness 1 week following commencement of therapy. She was seen by her GP and a presumptive diagnosis of angina was made. But the ECG taken on the same day was unremarkable. She was started on isosorbide mononitrate and soluble aspirin. As

isosorbide mononitrate produced severe headache, it was stopped the next day and she was continued on soluble aspirin. She continued to develop chest tightness for 4 months while she was on Xalatan drops and symptoms disappeared on discontinuation of the drug.

Comment

Little is known about the systemic side effects following topical use of latanoprost. The patients in our case series reported chest tightness. Two of the five patients developed the symptoms within 1 week of initiation of the drug. Only two patients required withdrawal of Xalatan therapy. It is interesting to note that the symptoms appeared sometime after the start of the therapy and disappeared spontaneously in three of the patients. The mechanism of this is unknown.

All five patients were elderly (67–82 years) with possibly compromised cardiac circulation. Prostaglandin F2 α is a known vasoconstrictor. Therefore, these elderly patients could be vulnerable to even small quantities of the drug reaching systemic circulation via topical administration. Systemic use of PGF2 α has been implicated in cardiac arrhythmias and vasospastic angina.^{4,5} However, the symptoms described by the patients in our series were not typical of cardiac pain. Case numbers 1–4 were not assessed by a physician and no ECG was taken. Case number 5 was assessed by a physician and the ECG did not show any abnormalities to support cardiac ischaemia. Out of five cases, only two patients were hypertensive (case numbers 2 and 4). The symptoms of chest tightness described by these patients were poorly localised, as is the case with pain of visceral origin. Prostaglandins also play a significant role in pain mechanisms.⁶ They sensitise visceral nociceptors,⁶ and PGF2 α in particular has been shown to produce allodynia (touch-evoked pain) in mice studies.⁷ The viscerae (heart, lung and gastrointestinal tract) have plenty of visceral nociceptors that are supplied by the visceral afferents. These afferent fibres travel in the vagus nerve that mediates visceral pain.⁸ Hence, it is possible that the chest tightness reported in this series is likely caused by the stimulation of visceral afferents by the systemically absorbed latanoprost. Patients should be encouraged to report such symptoms. The undesirable side effects of PGF2 α on the cardiovascular system and the sensory perception should be borne in mind while investigating them. We have reported two of these cases to the manufacturer. Although there is some suggestion of a cause–effect relationship between topical latanoprost and visceral pain, more detailed studies are required to evaluate the systemic side effects of topical latanoprost.

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Sir,

Cutaneous latanoprost in the treatment of alopecia areata

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Alopecia areata is thought to be mediated by an autoimmune reaction against the hair follicle or melanocytes.¹ We report a case of a patient who developed alopecia areata and had successful regrowth of her eyelashes after cutaneous treatment with latanoprost.

Case report

An 11-year-old girl was referred to the ophthalmology department with a history of bilateral loss of eyelashes. An incident had occurred 2½ years previously in which she had had an exacerbation of her asthma secondary to

a viral illness. During her illness, it was noted by her GP that her eyelashes had fallen out bilaterally, from the upper and lower lids. There was no loss of hair from the scalp/eyebrows or pitting of her nails. She recovered well and a follow-up was arranged with the dermatology department.

During her review, several treatments were tried (eg lid hygiene/massage), but there was no change in the amount and position of lashes present (serial photography at each three-monthly visit). There was no history of any lash growth between appointments. She was on no systemic medication. There was no past or present history or family history of any psychiatric disorders. There was no, history of any obsessive-compulsive behaviour, and interview of the child by herself did not reveal any clinical features suggestive of depression or anxiety² or, on direct questioning, to suggest trichotillomania.

Initial slit-lamp examination revealed bilateral loss of eyelashes with no evidence of erosions, crusts, or hair follicle haemorrhage (Figure 1). There was no evidence of inflammatory lid disease or eyelid tumour. Intraocular pressure (IOP) was 10 mmHg in both eyes, and she had light blue irides. She was otherwise systemically well.

Both mother and child were keen on some form of treatment. After a detailed discussion, she was prescribed latanoprost to be used cutaneously, once a day, to all eyelids, to be applied by a dressed orange stick. Serial photography was done. Minimal lash growth was noted on all four lids 4 weeks after application. There was no change in IOP or iris colour. A further 8-week appointment showed pronounced lash growth of all four lids (Figure 2). There was no change in IOP or iris colour. Her treatment was altered to once a week cutaneous use. Follow-up for 6 months has shown maintenance of the number of eyelashes with no alteration in IOP or iris colour. Both mother and child are pleased with the result.

Figure 1 Right eye at initial presentation to the eye department. No change had been noted in lashes for 2½ years.