

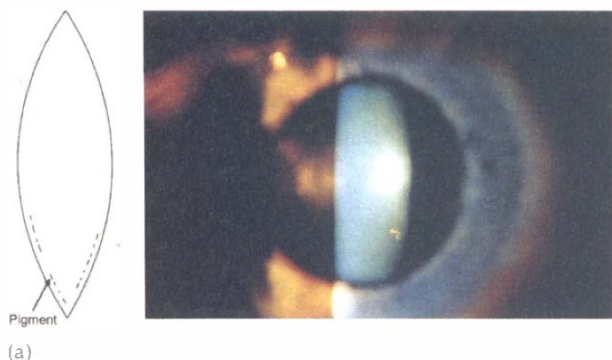
Sir,

Lens deposits associated with RIMSO-50 (dimethylsulphoxide)

RIMSO-50 is a preparation of 50% dimethylsulphoxide (DMSO) in aqueous solution and is used in the treatment of interstitial cystitis. The data sheet recommends 6 monthly ophthalmic review for patients receiving this treatment as animal toxicology studies have shown alterations in the refractive index of the lens in monkeys, dogs and rats. We describe a patient who developed pigmented lens deposits whilst having treatment with RIMSO-50.

Case report

In August 1997, a 58-year-old woman was commenced on RIMSO-50 bladder instillations for treatment of her interstitial cystitis. She was duly referred to the ophthalmic department for ocular examination as recommended in the data sheet. At her first two ocular examinations the lens was noted to be clear after pupil dilatation, with the remainder of the ocular examination also being normal apart from a Bergmeister's papilla on the right optic disc. In October 1998, examination revealed very fine brown/red pigment deposits in the anterior and posterior subcapsular lens cortex of both eyes (Fig. 1a right eye, Fig. 1b left eye). Unaided visual acuity at this time was 6/5 right and 6/6 left with no subjective change noted by the patient. The patient was



(a)



(b)

Fig. 1. (a) Right eye showing brown pigment deposits in the anterior and posterior subcapsular lens cortex. (b) Left eye showing pigment deposits in the superior anterior subcapsular lens cortex.



Fig. 2. October 1999. The pigment deposits have increased inferiorly in the left lens.

informed of the findings and, as they were not affecting her vision, she decided to continue with the treatment. Six months later the lens deposits were unchanged but the patient had been to her optometrist for a change of spectacles (increase in hypermetropia); she still wished to proceed with her bladder washouts. In October 1999, however, the pigment deposits had increased inferiorly in the lens of the left eye (Fig. 2); the corrected visual acuity was 6/5 right and left but after a discussion with her urologist, the patient decided to discontinue her RIMSO-50 treatment and was placed on alternative therapy. At her last review in April 2000 the pigment deposits had not changed.

Comment

Interstitial cystitis is a complex inflammatory condition of the bladder causing irritative voiding symptoms and pain. One of the agents used to treat this condition is a bladder instillation of dimethylsulphoxide (DMSO) given as a 50% solution on a weekly or alternate-weekly basis. Its mechanism of action remains unclear but DMSO has been reported to have analgesic and anti-inflammatory actions and may reduce collagen deposition.¹

In addition to treatment of interstitial cystitis, DMSO also has potential as a carrying agent for topical medication as it alters the barrier properties of the stratum corneum layer of skin. Clinical studies, however, were largely halted in 1965 by the Food and Drug Administration after toxicity studies with DMSO revealed changes in the crystalline lens of some species of animals. Administration of DMSO caused the cortical lens fibres to become less relucant whilst fibres in the deeper cortex and lens nucleus remained unchanged,² the net refractive effect was to produce a myopic shift. These lens changes can be produced by either oral or dermal application of DMSO and have occurred in dogs, monkeys, rats, pigs and rabbits.^{3,4} Although the lens nucleus has been observed to become more opalescent in dogs,⁴ there were no reports of frank cataractous or pigmentary change in any lens. Withdrawal of orally administered DMSO from affected dogs did not result in complete regression of the lens changes.

There are many causes of lens and capsule pigmentation including drugs (chlorpromazine, chloroquine)⁵ and metals (copper, iron, silver, gold),⁶ but our patient had no history of ingestion of these compounds and had no other ocular signs of either siderosis or chalcosis. Axial pigmentary stippling as described by Vogt⁷ also has to be considered in the differential diagnosis but has a different appearance to that seen in our patient with the pigment deposits being much finer.

It is difficult to postulate a mechanism by which DMSO could cause pigmented deposits in the lens. Histological examination of animal eyes reveals that DMSO itself does not accumulate in the lens although significant concentrations can be found in cornea, aqueous, vitreous and sclera.⁸ It could be postulated that metabolic products of DMSO rather than DMSO itself are responsible. The major biochemical changes reported in DMSO-affected lenses are decreased concentrations of urea, uric acid, glutathione and amino acids, with an increase in albuminoids.⁹ DMSO has been reported to cause a loss of gamma-crystallin and an increase in water-insoluble protein in the lens.¹⁰ None of these changes, however, could be expected to lead to pigmentary changes. We cannot comment on how the plasma level of DMSO in the animals that developed lens changes compares with that in humans receiving bladder instillations, as neither the manufacturer nor we could find evidence of these data.

To date, many thousands of patients have been treated with DMSO bladder instillations and the Medicines Control Agency has received five reports of eye disorders: two 'abnormal vision', one myopia and two blurred vision (personal communication with Britannia Pharmaceuticals). Whilst we have no definite mechanism as to the cause of the pigment deposits, we believe they should be looked for when screening patients using DMSO bladder instillations.

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Corneal burn secondary to amyl nitrite

Amyl nitrite is a volatile vasodilator and is often abused by inhalation to produce a 'high'.¹ Standard toxicology advice at present states that only transient superficial injuries are to be expected following splash contamination to the eyes. Reports of such injuries are rare.^{2,3} We report an unusual case of a moderate corneal burn following exposure to the liquid form of amyl nitrite.

Case report

A 37-year-old woman presented following a splash injury to her eyes with the liquid form of amyl nitrite 11 h previously. She irrigated her eyes several hours after the initial injury before attending casualty complaining of stinging and decreased visual acuity particularly affecting the right eye. There was no other ocular or medical history of note.

Despite having a neutral pH on presentation, she was further irrigated with at least 2 l of normal saline. Subsequent examination revealed a visual acuity (VA) of 6/24 improving to 6/12 with pinhole (PH) in the right eye (RE) and 6/12 improving to 6/9 with PH in the left eye (LE). There was marked erythema and oedema of her right eyelids. Anterior segment examination of the RE showed 270° of perilimbal ischaemia with conjunctival chemosis and nasal conjunctival epithelial loss. There



Fig. 1. Anterior segment photograph of the right eye showing marked perilimbal ischaemia.