Medicinal mishap

Tamsulosin-induced intraoperative floppy iris syndrome during cataract surgery

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Case

A 67-year-old man was referred for cataract surgery. He had noticed deteriorating vision in the left eye, greater than the right, over the last eight months with difficulty driving due to glare. He had a history of essential hypertension controlled by perindopril and had been taking tamsulosin for three years for benign prostatic hypertrophy with some symptomatic relief.

On examination, best-corrected visual acuity was 6/12 in the right and 6/24 in the left eye. Both pupils dilated minimally with topical tropicamide 1%, but light responses were normal. Apart from nuclear sclerotic cataracts, the rest of the anterior and posterior segment examination including intraocular pressures was normal.

Cataract surgery to the left eye was performed under local anaesthesia. Despite routine preoperative dilation with topical tropicamide 1%, cyclopentolate 1% and phenylephrine 2.5%, the patient's pupil remained miosed at 3 mm in diameter. This did not improve with instillation of topical phenylephrine 10%. Further intervention only increased the pupillary diameter to 3.5 mm.

The iris was noted to be atonic and had a propensity to prolapse out of the main clear corneal incision. A diagnosis of intraoperative floppy iris syndrome was suspected. Routine cataract surgery could not proceed with such a small pupil size. Four iris retracting hooks were needed to stretch the pupil to over 6 mm to enable the cataract to be removed (Fig. 1). Postoperatively, the patient's best-corrected visual acuity in his left eye improved to 6/12 on day one and 6/6 at four weeks.

Comment

Intraoperative floppy iris syndrome is a condition characterised by:

- poor preoperative pupil dilation
- a floppy iris with a propensity to billow and prolapse from surgical wounds
- progressive intraoperative miosis.

A floppy iris makes cataract surgery more difficult, with a higher incidence of complications including posterior capsular rupture, vitreous loss and iris trauma.[1]

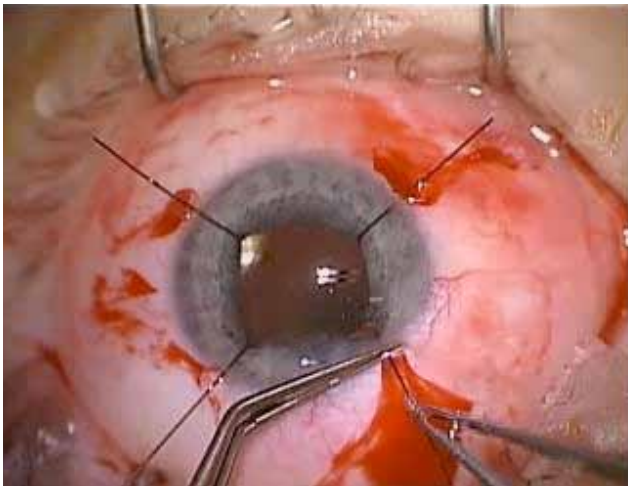
Intraoperative floppy iris syndrome has most commonly been associated with tamsulosin, a selective alpha$_1$ adrenergic antagonist used for relief of lower urinary tract symptoms associated with benign prostatic hypertrophy. The syndrome is nine times more prevalent in males.[2] Between 40%[3] and 90%[1] of patients on tamsulosin develop intraoperative floppy iris syndrome. Tamsulosin has also been associated with a 2.3 times increased postoperative cataract complication rate.[3] Other less selective alpha$_1$ adrenergic antagonists including terazosin and prazosin have also been implicated. Although it can occur without use of alpha$_1$ adrenergic antagonists, no statistically significant association has been found between intraoperative floppy iris syndrome and other medications or disease.[2]

Alpha$_1$ adrenergic antagonists relax smooth muscle, including that of the dilator muscle of the iris.[3] However, the mechanism by which tamsulosin induces intraoperative floppy iris syndrome is likely to be more complex given the multiple signalling pathways in the iris.[2] Histological studies have also failed to show changes in the dilator muscle.[1] Disappointingly, preoperative cessation of alpha$_1$ adrenergic antagonists does not prevent intraoperative floppy iris syndrome, even when stopped years before surgery, whereas they can induce intraoperative floppy iris syndrome within weeks of first use.[1,3]

The most important factor governing cataract surgery outcomes in patients on an alpha$_1$ adrenergic antagonist is recognition of its ability to induce intraoperative floppy iris syndrome. The astute surgeon can then plan a suitable management approach. Some studies have shown

Fig. 1

Iris retracting hooks used to stretch the pupil during cataract surgery



intraoperative cataract complication rates (posterior capsular rupture with vitreous loss) with undiagnosed intraoperative floppy iris syndrome as high as 12%,[2] falling to 0.6% when the surgeon is aware the patient has used tamsulosin.[1]

Conclusion

As cataracts and the use of alpha$_1$ adrenergic antagonists increase with age, it is not surprising that the incidence of intraoperative floppy iris syndrome has been reported to occur in up to 3.7% of cataract surgeries.[2] It is important that patients due for cataract surgery are told to remind their ophthalmologist if they have ever taken tamsulosin. The ophthalmologist should also seek this history. Preoperative cessation of the drug is not currently recommended. With recognition of the potential problem and careful pre- and intraoperative planning, the ophthalmologist can minimise surgical complications associated with intraoperative floppy iris syndrome.

References

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2. Neff KD, Sandoval HP, Fernandez de Castro LE, Nowacki AS, Vroman DT, Solomon KD. Factors associated with intraoperative floppy iris syndrome. Ophthalmol 2009;116:658-63.
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Conflict of interest: none declared

Drug information resources

As of 1 July 2010 the Therapeutic Advice and Information Service (TAIS) national drug information service for health professionals will no longer be operational. The National Prescribing Service acknowledges the dedication and expertise of the staff who contributed to the high quality of TAIS over its ten years of operation.

Closer to the cessation date, health professionals will be able to access an index of other sources of drug information on the NPS website at www.nps.org.au/health_professionals. Please note that while some of these linked resources are open access, others may require a subscription fee.

New drugs

Some of the views expressed in the following notes on newly approved products should be regarded as tentative, as there may be limited published data and little experience in Australia of their safety or efficacy. However, the Editorial Executive Committee believes that comments made in good faith at an early stage may still be of value. As a result of fuller experience, initial comments may need to be modified. The Committee is prepared to do this. Before new drugs are prescribed, the Committee believes it is important that full information is obtained either from the manufacturer's approved product information, a drug information centre or some other appropriate source.

Azacitidine

Vidaza (Celgene)

vials containing 100 mg as lyophilised powder for reconstitution

Approved indication: myelodysplasia, leukaemia

Australian Medicines Handbook section 14

The myelodysplastic syndromes are disorders in which the pluripotent stem cells function abnormally. As any cell lines can be affected the patient may have anaemia, neutropenia or thrombocytopenia. The syndromes include chronic myelomonocytic leukaemia and the myelodysplasia may progress to acute myeloid leukaemia.

In myelodysplasia, tumour suppressor genes may be inactivated by hypermethylation. Preventing hypermethylation may reduce the proliferation of abnormal cells.

Azacitidine is an analogue of cytidine, one of the nucleosides which make up nucleic acids. When azacitidine is incorporated into DNA it inhibits DNA methyltransferase, reducing hypermethylation, and has a direct cytotoxic effect on abnormally proliferating cells.

In the first treatment cycle azacitidine is given by daily subcutaneous injection for seven days. This cycle is repeated every four weeks for as long as the patient continues to benefit.

Most of the dose is excreted in the urine as azacitidine and its metabolites. Azacitidine is contraindicated in patients with malignant hepatic tumours and those with renal failure.

After phase II trials of intravenous and subcutaneous doses produced favourable results, a phase III trial was carried out in 191 patients with myelodysplasia. These patients were randomly assigned to azacitidine or supportive care. They were assessed after four treatment cycles, and those who had responded to azacitidine could continue. Responses were assessed by changes in the blood and bone marrow and the need for transfusion. In the azacitidine group, 16% of the patients had a partial response and 7% had a complete response. The median duration of all the improvements was 15 months. No-one in the supportive care group had a complete or a partial