CATARACT NEWSLETTER

SOLOMON
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Alpha-blockers Pose a Higher Risk of Cataract Surgical Complications

! Intraoperative Floppy Iris Syndrome (**IFIS**) was first described in 2005 as a clinical triad observed during cataract surgery that includes fluttering and billowing of the iris stroma, propensity for iris prolapse, and constriction of the pupil. IFIS increases the risk of complications during cataract surgery; which include, but are not limited to iris transillumination defects, iridodialysis (torn iris) and a ruptured lens capsule which can lead to a dislocated intraocular lens or vitreous prolapse with subsequent retinal detachment.

Torn Iris with Intraocular Lens Dislocation

! Numerous reports have linked IFIS to use of alpha$_1$-adrenergic antagonists, most notably tamsulosin (**Flomax**), which is the most commonly prescribed drug for the treatment of lower urinary tract symptoms of benign prostatic hyperplasia (**BPH**). Tamsulosin blocks prostatic alpha-$_{1a}$ but also selectively block alpha-$_{1a}$ adrenergic receptor in the iris dilator muscle, preventing mydriasis during cataract surgery.

! Other alpha-$_{1a}$ antagonists, including terazosin (**Hytrin**), doxazosin (**Cardura**), alfuzosin (**Uroxatral**), and recently silodosin (**Rapaflo**) have also been linked to IFIS; however, their relationship to the syndrome is not as definitive. This class of drugs improves bladder emptying and reduces urinary frequency by relaxing the smooth muscle in the prostate and bladder neck. Because vascular smooth muscle contraction is also mediated by the alpha-$_1$ adrenoreceptor, terazosin and doxazosin are also prescribed for hypertension. Finally, tamsulosin is frequently prescribed as a short term pharmacologic adjunct for the treatment of renal calculi. This is important because IFIS has been reportedly in a patient started on tamsulosin two days before his cataract surgery.

" Interestingly, since the initial description, IFIS has also been implicated in small case reports with associations to other medications. Specifically, ropinirole (**Requip**), a non-ergoline dopamine agonist indicated for treatment of Parkinson's disease and moderate to severe Restless Leg Syndrome (**RLS**), and herbal supplements such as, Saw Palmetto (***Serenoa repens***). The connection of IFIS with the non-alpha adrenergic antagonists remains merely anecdotal. For the sake of this discussion we will focus on the relationship to the alpha-adrenergic receptor blockers.

1.1 IFIS

"Numerous reports have liked IFIS to use of alpha$_1$-adrenergic antagonists"

1.2 IFIS PHARMACOLOGY

" ...iris dilator smooth muscle and deficient muscle tone is the 20-fold greater affinity for alpha-$_{1a}$ than alpha-$_{1b}$ receptors seen with tamsulosin (FLOMAX)."

2.1 MANAGEMENT STRATEGIES

"...the utility of stopping tamsulosin preoperatively remains controversial and of unproven benefit."

2.2 RECOMMENDATIONS

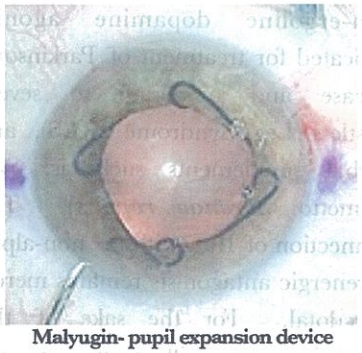
" In patients with incipient cataracts, prescribing physicians, should consider involving the cataract surgeon before initiating tamsulosin."

IFIS PHARMACOLOGY

! The exact distribution of alpha-1 receptor subtypes in the human iris smooth dilator muscle in not known. Histopathologic studies of patients with a history tamsulosin, demonstrated a decrease in thickness of iris dilator muscle when compared with that of controls. A potential factor behind the blocked contraction of the iris dilator smooth muscle and deficient muscle tone is the 20-fold greater affinity for alpha-$_{1a}$ than alpha-$_{1b}$ receptors seen with tamsulosin. Despite the fact that there was no relationship to total exposure to tamsulosin, this certainly is suggestive of a resulting atrophic process.

MANAGEMENT STRATEGIES

! Several approaches to manage the troublesome iris behavior in IFIS have been proposed- including pharmacologic strategies, use of highly viscous or viscoadaptive ophthalmic viscosurgical devises (OVDs), and the placement of mechanical dilating devices. Even in combination, there has yet to be a definitive surgical method that is 100% effective, and there is no substitution for early recognition and preparation.



Malyugin- pupil expansion device

The serum half-life of tamsulosin is approximately 48-72 hours. Although it would seem logical, the utility of stopping tamsulosin preoperatively remains controversial and of unproven benefit. IFIS has been reported in patients who have stopped tamsulosin for more than one year. Aqueous humor samples taken at the time of surgery, from patients who discontinued the drug for one month prior to surgery, demonstrated measurable levels of tamsulosin, suggesting a prolonged drug-receptor binding time. Overall, it appears that stopping tamsulosin before cataract surgery is of unpredictable value and does not prevent or reduced the severity of IFIS.

RECOMMENDATIONS

! A recent poll of nearly 1000 cataract surgeons, jointly conducted by the American Society of Cataract and Refractive Surgery (ASCRS) and the American Academy of Ophthalmology (AAO), showed that 77% felt that IFIS increases the cataract surgery complication rate above baseline.

The incidence of BPH is approximately 50% in men older that 50 years and 90% in men older that 85 years. Because of its uroselectivity tamsulosin is the most popular pharmacologic treatment for BPH. Especially if it is unexpected or unrecognized, IFIS is associated with an increased risk of cataract surgical complication.

! It has been our practice since the early reports in our preoperative assessment to ask all patients of current and previous use of Flomax or other alpha- adrenergic receptor blocker.

! More recently, it is the recommendation of the ASCRS with AAO along with the American College of Physicians and the American Academy of Family Physicians, that for patients with known or incipient cataracts, prescribing doctors, consider involving the cataract surgeon before initiating non-emergent, chronic tamsulosin.

BIOGRAPHY

Jonathan D. Solomon, M.D., is a board certified Ophthalmologist specializing in Anterior Segment Surgery, including Cataract and Refractive surgery. He graduated with honors from the University of Maryland, received his medical degree from Temple University and completed his post-graduate training at the prestigious Casey Eye Institute and Devers Eye Institute of Portland, Oregon. As a fellow of the American Academy of Ophthalmology, American Society of Cataract and Refractive Surgery, International Society of Refractive Surgery, and exclusive Corneal Society, he serves as an executive board member of the Maryland Society of Eye Physicians and Surgeons. Dr. Solomon continues to remain active in the academic community, as a Clinical Instructor at The Wilmer Eye Institute, The Johns Hopkins University. He also serve as a consultant to leading manufactures of precision surgical equipment and intraocular lens implants, in an effort to improve surgical outcomes.

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