THE LITERATURE

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Outcome of Ocular Steroid Hypertensive Response in Children

Kaur S, Dhiman I, Kaushik S, et al[1]

ABSTRACT SUMMARY

This retrospective study analyzed the epidemiological profile and outcome of steroid-induced glaucoma in children at a tertiary eye center in Chandigarh, India. Researchers reviewed the medical records from the pediatric glaucoma clinic from 2005 to 2012. Of the 385 pediatric glaucoma patients identified, 150 had acquired glaucomas, of whom 36 (24%) had an IOP higher than 21 mm Hg after steroid use. The mean age of patients was 9.2 ±2.4 years (range, 4-12 years).

Of the 36 patients, 15 (41.6%) had received topical steroids for vernal keratoconjunctivitis (VKC), nine (25%) had taken oral and topical steroids for uveitis, nine (25%) had received oral steroids for nephrotic syndrome, and three (8.3%) had taken oral steroids for cysticercosis, liver disease, and cystic fibrosis (1 patient each). The most commonly used topical steroid was betamethasone (62%), followed by dexamethasone (38%). The mean duration of steroid usage was 2.46 ±1.6 years among the 24 patients whose steroid history was available.

Twenty-two (6.1%) of the 36 patients had a bilateral ocular steroid hypertensive episode. The mean IOP at presentation was 27.5 ±13.7 mm Hg, and five eyes (8.8%) exhibited total cupping at presentation. In terms of treatment, 22 eyes of 16 patients (44.4%) were managed by the withdrawal of steroids only, 25 eyes of 13 patients were managed with medical therapy, and 10 eyes of seven patients required surgery.

DISCUSSION

Why is steroid-induced glaucoma prevalent in children?

Children have been reported to be particularly susceptible to developing steroid-induced glaucoma, and the IOP may increase more severely and rapidly than in adults. The differences may be due to the immature angle structures in children compared to adults. Additionally, elevated IOP in children is likely to occur early and is more likely to be missed because of a lack of symptoms and articulation.

Steroid-induced glaucoma is an iatrogenic condition. The use of steroids reduces symptoms of the primary pathology, which may lead to the continued unmonitored use of steroids for long periods of time. The increase in IOP can go unnoticed until advanced disc damage occurs. In India, steroids are available over the counter without a prescription, which may compound the problem.

How should steroid-induced glaucoma in children be managed?

Steroids, topical and/or oral, should be withdrawn or their dosage and frequency decreased whenever possible. Clinicians should prescribe IOP-lowering medications but carefully avoid α_2-adrenergic agonists. If steroids need to be prescribed, steroid-sparing drugs or immunosuppressives should be considered as alternative therapy. Steroids that affect IOP less include rimexolone, prednisolone acetate 0.12%, loteprednol, and fluorometholone. If more potent steroids are required such as prednisolone 1%, dexamethasone, and difluprednate, it is important to monitor IOP vigilantly and start ocular hypotensive medications whenever elevated IOP is detected. As with adults, if prolonged steroids are required, IOP should be checked frequently.

360-Degree Trabeculotomy for Medically-Refractory Glaucoma Following Cataract Surgery and Juvenile Open Angle Glaucoma

Lim ME, Dao JB, Freedman SF[2]

ABSTRACT SUMMARY

This retrospective case series evaluated the long-term outcomes of illuminated microcatheter-assisted 360° trabeculotomy (360-trabeculotomy) for medically refractory glaucoma following cataract surgery (GFCS) and medically refractory juvenile open-angle glaucoma (JOAG). Consecutive cases of 360-trabeculotomy between 2008 to 2015 were identified and performed in a single-surgeon pediatric glaucoma practice. The study included 35 eyes (35 patients), of which 25 eyes had GFCS and 10 eyes had JOAG.

Success for GFCS and JOAG was 18 of 25 (72%) eyes versus six of 10 (60%) eyes at a mean follow-up of 31.9 ±26.1 and 24.5 ±19.7 months, respectively. IOP decreased significantly from baseline for both GFCS

(31.5 ±7.5 mm Hg to 19.2 ±7.7 mm Hg, $P < .001$) and JOAG (29.5 ±10.3 mm Hg to 15.8 ±6.6 mm Hg, $P < .001$). For both GFCS and JOAG, fewer glaucoma medications were needed after surgery. Three-year Kaplan-Meier success for GFCS and JOAG was 75.3% and 53.3%, respectively. The investigators concluded that 360-trabeculotomy significantly lowered IOP in medically refractory GFCS and JOAG.

DISCUSSION

What complications were reported with this surgical intervention?

The most common complication after 360-trabeculotomy was hyphema. After surgery, all eyes had a small hyphema, the majority of which cleared by postoperative week 1. Two eyes (GFCS: 1 eye and JOAG: 1 eye) had a hyphema that persisted longer than 1 week but resolved without surgery. Choroidal effusion (1 GFCS eye), vitreous hemorrhage (3 GFCS eyes), and Descemet detachment (1 GFCS eye) also occurred. Of the eyes with vitreous hemorrhage, one resolved spontaneously, one required pars plana vitrectomy only, and another required pars plana vitrectomy combined with endocyclophotocoagulation because of poorly controlled IOP. There were no devastating complications such as retinal detachment, endophthalmitis, phthisis, or loss of light-perception vision.

When should 360-trabeculotomy be considered?

The researchers suggested that 360-trabeculotomy is a low-risk option that may be considered in patients with medically refractory GFCS and JOAG. The procedure may buy children and young adults with glaucoma some time before they must undergo more invasive IOP-lowering surgery such as trabeculectomy and the implantation of a glaucoma drainage device. According to the investigators, their data support attempted 360-trabeculotomy in cases of relatively early-onset GFCS with an open angle to at least the trabecular meshwork and without broad or extensive peripheral anterior synechiae. The researchers added that, for eyes with JOAG and severe optic nerve damage requiring a lower postoperative target IOP (< 12 mm Hg), angle surgery alone may not be adequate. ■

> "[A 360° trabeculotomy] may buy children and young adults with glaucoma some time before they must undergo more invasive IOP-lowering surgery."

1. Kaur S, Dhiman I, Kaushik S, Raj S, Pandav SS. Outcome of ocular steroid hypertensive response in children. *J Glaucoma*. 2016;25:343-347.
2. Lim ME, Dao JB, Freedman SF. 360-degree trabeculotomy for medically-refractory glaucoma following cataract surgery and juvenile open angle glaucoma. *Am J Ophthalmol*. 2017;175:1-7.

AT A GLANCE

- Children are particularly susceptible to developing steroid-induced glaucoma, and IOP may increase more severely and rapidly than in adults. A retrospective study analyzed the epidemiological profile and outcome of steroid-induced glaucoma in children at a tertiary eye center in India. Of the 385 pediatric glaucoma patients identified, 150 had acquired glaucomas, of whom 36 (24%) had an IOP higher than 21 mm Hg after steroid use.
- A retrospective case series suggests that illuminated microcatheter-assisted 360° trabeculotomy is a low-risk option to consider for patients with medically refractory glaucoma following cataract surgery or medically refractory juvenile open-angle glaucoma.

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