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Uveitic Secondary Glaucoma

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Secondary glaucoma associated with uveitis is a challenging condition to manage, often with a frustrating outcome. This problem has not been extensively addressed in the literature, and it seemed to us that it might be an under-appreciated yet important cause of vision loss in the population of patients with uveitis.

In our study of 1,254 patients with uveitis, we found that nearly 10% had glaucoma as an additional vision-threatening feature, further compounding the challenges posed by inflammatory damage to the macula. Our data were similar to prior reports of the prevalence of glaucoma associated with selected uveitis entities.

The prevalence has been especially alarming in juvenile idiopathic arthritis (JIA)-associated uveitis; however, in our patients, it has not been as high as in other studies. This reflects our philosophy of intolerance toward chronic, even “low-grade,” inflammation and prolonged steroid use.

Chronic granulomatous anterior uveitis was the most frequent uveitis classification associated with secondary glaucoma in our patients, and in previous reports. However, it was also common in posterior and panuveitis and in patients with pars planitis. The most common presentation of secondary glaucoma was open angle (80% of the eyes). Because mechanical blockage of the trabecular meshwork is usually transient and responsive to anti-inflammatory therapy, glaucoma may instead result from microscopic outflow dysfunction caused by inflammatory proteins, debris, cells, or normal serum components that can clog the trabecular meshwork. In certain inflammatory conditions, particularly glaucomatocyclitic crisis (Posner–Schlossman syndrome), inflammatory mediators such as prostaglandins and substance P have been implicated in the development of secondary open-angle glaucoma, with important therapeutic implications.

Uveitic secondary glaucoma may also be related to trabecular endothelial cell loss secondary to aggressive phagocytic activity and autolysis. Since trabecular meshwork is a part of the uveal tract, it may become directly involved in the inflammatory process (trabeculitis), a putative common mechanism for glaucoma in herpetic uveitis. Peripheral anterior synechiae were found in 14% of the secondary glaucoma affected eyes. Ultrasound biomicroscopy of the anterior segment may be used to detect alterations of angle and ciliary body structures in patients with uveitis and hazy media and may help in elucidating mechanisms of glaucoma in these patients.

Although most of secondary glaucoma cases were secondary to idiopathic uveitis, sarcoid and JIA-associated uveitis, a study of the relative frequency of secondary glaucoma per disease showed that herpes family viruses (simplex and zoster) associated uveitis was most likely to cause secondary glaucoma (23% of the eyes). Previous reports showed similar rates (13-33%), addressing the importance of glaucoma for the visual outcome in these patients. Since chronic oral antiviral therapy reduces the recurrence rate of uveitis in patients with HSV and VZV uveitis, we believe that the increasing frequency of this therapeutic strategy will lower the relative frequency of secondary glaucoma in these patients.

Secondary glaucoma occurred in 16% of our patients with JIA-associated uveitis; other authors have reported that in 14% to 27% of patients with JIA-associated iridocyclitis develop glaucoma. This is particularly concerning, as this disease occurs in children, and chronic inflammation is often present both before and after ophthalmologic evaluation. Such chronic or recurrent inflammation may explain why 7 of 11 JIA-associated uveitis patients with glaucoma had uncontrolled glaucoma at the time of the data analysis. Five eyes of four patients had undergone argon laser trabeculoplasty (ALT) as part of their treatment. Four of the five eyes (80%) were treatment failures, and trabeculectomy was subsequently performed. In three of the five eyes that underwent ALT, an acute flare of uveitis occurred following the procedure despite pre-treatment with topical corticosteroids. We do not advocate ALT as part of our treatment regimen for uveitis-related glaucoma.

Our 2016 study showed the efficacy and safety of selective laser trabeculoplasty in patients with uveitis when inflammation was controlled with immunomodulatory therapy. Later, we demonstrated the efficacy of the Ahmed valve procedure in these patients.

This report examined patients with uveitis related secondary glaucoma seen at a tertiary referral center during a ten-year period. Our surgical procedure of choice for patients with uncontrolled uveitis-related glaucoma was conventional trabeculectomy until 1990. Thereafter, we adopted trabeculectomy with mitomycin C. However, currently, the procedures of choice are SLT, Minimally Invasive Glaucoma Surgery (MIGS), and glaucoma valve procedures such as Ahmed glaucoma valve in those patients who fail medical therapy.

But real progress in this area of uveitis-associated glaucoma will come with increasing recognition by ophthalmologists that complete, earlier control of intraocular inflammation—using a stepladder approach to achieve this goal—is more in the overall interests of the patient than “acceptance” of low-grade chronic inflammation.

References:

- 1) Maleki A, Swan RT, Lasave AF, Ma L, Foster CS. Selective Laser Trabeculoplasty in Controlled Uveitis with Steroid-Induced Glaucoma. *Ophthalmology*. 2016;123(12):2630-2632.
- 2) Kubaisi B, Maleki A, Ahmed A, Lamba N, Sahawneh H, Stephenson A, Montieth A, Topgi S, Foster CS. Ahmed glaucoma valve in uveitic patients with fluocinolone acetonide implant-induced glaucoma: 3-year follow-up. *Clin Ophthalmol*. 2018;12:799-804.
- 3) Siddique SS, Suelves AM, Baheti U, Foster CS. Glaucoma and uveitis. *Surv Ophthalmol*. 2013;58(1):1-10. doi: 10.1016/j.survophthal.2012.04.006. PMID: 23217584.
- 4) Caprioli J, Samson CM, Foster CS, Araie M, Rockwood EJ. Uveitis and glaucoma. *J Glaucoma*. 2000;9(6):463-7.
- 5) Merayo-Llodes J, Power WJ, Rodriguez A, Pedroza-Seres M, Foster CS. Secondary glaucoma in patients with uveitis. *Ophthalmologica*. 1999;213(5):300-4.
- 6) Groth SL, Newcomb CW, Yang W, Payal A, Begum H, Khachatryan N, Kaçmaz RO, Dreger KA, Rosenbaum JT, Sen HN, Suhler EB, Thorne JE, Bhatt NP, Foster CS, Jabs DA, Levy-Clarke GA, Buchanich JM, Ying GS, Kempen JH, Gangaputra S; Systemic Immunosuppressive Therapy for Eye Diseases (SITE) Cohort Study Research Group. The Rate of Failure of Trabeculectomy and Tube Shunt Surgery in Eyes with Uveitic Glaucoma and Ocular Hypertension. *Ophthalmol Glaucoma*. 2025;8(6):580-588.
- 7) Da Mata A, Burk SE, Netland PA, Baltatzis S, Christen W, Foster CS. Management of uveitic glaucoma with Ahmed glaucoma valve implantation. *Ophthalmology*. 1999;106(11):2168-72.
- 8) Foster CS, Havrlikova K, Baltatzis S, Christen WG, Merayo-Llodes J. Secondary glaucoma in patients with juvenile rheumatoid arthritis-associated iridocyclitis. *Acta Ophthalmol Scand*. 2000;78(5):576-9.
- 9) Bui TT, Rosdahl JA. Systematic Review of MIGS and Non-Penetrating Glaucoma Procedures for Uveitic Glaucoma. *Semin Ophthalmol*. 2022;37(7-8):830-838.
- 10) Seow WH, Lim CHL, Lim BXH, Lim DK. Uveitis and glaucoma: a look at present day surgical options. *Curr Opin Ophthalmol*. 2023;34(2):152-161.