of 9.6 weeks (range, 2–30 weeks). Five of the patients were children (aged 6–16 years). An increase in IOP of 15 mm Hg or more was measured in 11 patients (41%)—4 of 5 children and 7 of 22 adults. An increase of 20 mm Hg or more was seen in 2 of 5 children and 3 of 22 adults. The peak IOP was 30 mm Hg or higher in 3 of 5 children and 4 of 22 adults. All IOP increases responded to difluprednate discontinuation or addition of glaucoma medications. No patient required glaucoma surgery.

The mean AC cell grade prior to starting difluprednate treatment was 1.7 on a scale of 0 to 4. Seven eyes (15%) of 7 patients had an AC cell grade of 0 prior to switching to difluprednate treatment. At the peak IOP while receiving difluprednate, a mean reduction in AC cell grade of 1.3 was measured. Twenty-five eyes (54%) had an AC cell grade of 0 when treated with difluprednate.

**Comment.** Difluprednate appears to be an effective topical corticosteroid, but it may cause dramatic elevation of IOP in some patients, particularly children. In this series, IOP increased even in those patients not previously considered to be steroid responders to other topical agents such as prednisolone acetate. It is difficult to compare our results with published data on elevation of IOP reported with other corticosteroid eyedrops. An initial study by Armaly7 on topical corticosteroids reported a 10–mm Hg IOP increase in 28% of subjects and an increase greater than 15 mm Hg in 5% of subjects. However, these data are from normal control subjects, not patients with uveitis. Data on steroid response in patients with uveitis are limited. One series reported 2 of 18 eyes (11%) with uveitis and an IOP elevation to 30 mm Hg secondary to treatment with betamethasone phosphate, 0.1%, 3 times a day for 6 weeks.8

The question arises whether the high IOP seen here represents recovery of ciliary body shutdown with resolution of inflammation. However, more than 70% of the patients in this series had a modest AC reaction (<2+ cells), not typically enough to shut down aqueous production. As well, the IOP response observed here was very rapid and dramatic.

The unpredictable and potentially dramatic IOP response to topical difluprednate demonstrated here mandates the need for close IOP monitoring in patients treated with this agent. Because the IOP elevation was particularly pronounced in children, we stress the need for IOP monitoring of all patients with uveitis, including those in the pediatric age group, at every visit.

**Andrea D. Birnbaum, MD, PhD**
**Yi Jiang, BS**
**Howard H. Tessler, MD**
**Debra A. Goldstein, MD**

**Author Affiliations:** Department of Ophthalmology and Visual Sciences, University of Illinois at Chicago (Drs Birnbaum, Tessler, and Goldstein), and Rush University Medical School (Mr Jiang), Chicago.

**Correspondence:** Dr Goldstein, Department of Ophthalmology and Visual Sciences, University of Illinois at Chicago, 1855 W Taylor, MC 648, Chicago, IL 60612 (debrgold@uic.edu).

**Financial Disclosure:** None reported.

---

### Table. Proportion of Patients Who Developed a Marked Increase in Intraocular Pressure While Receiving Topical Difluprednate

<table>
<thead>
<tr>
<th>IOP Measurement, mm Hg</th>
<th>Children</th>
<th>Adults</th>
<th>Total Patients</th>
<th>Eyes (% of Treated Eyes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase ≥ 10</td>
<td>4 (80)</td>
<td>10 (45)</td>
<td>14 (52)</td>
<td>18 (39)</td>
</tr>
<tr>
<td>≥ 15</td>
<td>4 (80)</td>
<td>7 (32)</td>
<td>11 (41)</td>
<td>13 (28)</td>
</tr>
<tr>
<td>≥ 20</td>
<td>2 (40)</td>
<td>3 (14)</td>
<td>5 (19)</td>
<td>6 (13)</td>
</tr>
<tr>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 30</td>
<td>3 (60)</td>
<td>4 (18)</td>
<td>7 (26)</td>
<td>9 (20)</td>
</tr>
<tr>
<td>≥ 40</td>
<td>1 (10)</td>
<td>2 (9)</td>
<td>3 (11)</td>
<td>4 (9)</td>
</tr>
<tr>
<td>≥ 50</td>
<td>0 (0)</td>
<td>1 (5)</td>
<td>1 (4)</td>
<td>1 (2)</td>
</tr>
</tbody>
</table>

Abbreviation: IOP, intraocular pressure.

aThe increase in IOP was based on the peak IOP while receiving difluprednate relative to the IOP measured immediately prior to initiating treatment with the medication.

---


---

**Intraocular Pressure Elevation During Radioactive Plaque Brachytherapy for Uveal Melanoma**

Uveal melanoma is the most common primary intraocular malignant neoplasm in adults, with an average incidence of 6 cases per 1 million people per year.¹ The Collaborative Ocular Melanoma Study has shown that radioactive iodine 125 plaque brachytherapy offers equivalent survival compared with enucleation.² While allowing preservation of the eye, brachytherapy has many potential complications, including dry eye, cataract, radiation retinopathy and optic neuropathy, glaucoma, and vision loss.³ To our knowledge, intraocular pressure (IOP) fluctuation during brachytherapy has not been previously described. The purpose of this investigation was to quantify the IOP changes during brachytherapy. Based on clinical experience, we speculated that the IOP would increase during brachytherapy...
and that older age, presence of glaucoma or diabetes mellitus (DM), larger radiation doses, larger tumor size, lack of rectus muscle disinsertion, and anterior tumor location may be associated with larger IOP elevations.

Methods. This was a retrospective record review of all patients undergoing Collaborative Ocular Melanoma Study–style brachytherapy at the Eye Institute of the Medical College of Wisconsin between January 1, 1996, and December 31, 2007. Institutional review board approval was obtained. Patients were identified by billing record search. Exclusion criteria included being younger than 18 years, having nonmelanotic tumors, and having incomplete medical documentation. The following data were gathered: preoperative IOP, age, sex, history of DM or glaucoma, tumor location and height, radiation dose, plaque diameter, daily IOP during brachytherapy, muscle disinsertion, and use of topical antiglaucoma medications.

Results. Of 113 patients identified as having uveal melanoma, 40 were excluded owing to incomplete records. There were 33 men and 40 women. The mean (SD) age was 61.9 (15.7) years. One patient had open-angle glaucoma, no patients had ocular hypertension, and 12 patients had DM.

Three IOP variables were constructed: a preoperative IOP composite for each patient, defined as the average of preoperative IOP measurements (≤3 measurements); delta IOP (ΔIOP), or the change in IOP as measured on a perioperative day minus the preoperative composite; and the maximum ΔIOP (ΔIOPmax) for each patient.

The mean preoperative IOP composite was 16.0 mm Hg. This was statistically different from the mean IOPmax of 24.3 mm Hg during brachytherapy (P < .001) but not statistically different from the mean IOP of 15.5 mm Hg 1 day after plaque removal (P = .24) (Figure). The mean (SD) ΔIOPmax during plaque therapy was 8.5 (6.0) mm Hg. This was not statistically different for tumors at the posterior pole, midperiphery, and ciliary body (P = .15). Using a linear regression model, there was no relationship between tumor height and ΔIOPmax (P = .53) or between the mean total radiation dose and ΔIOPmax (P = .46). There was limited correlation between plaque diameter and ΔIOPmax using a linear regression model (r2 = 0.07; P = .02). The ΔIOPmax for patients with DM was not statistically different from the ΔIOPmax for those without DM (P = .40). Eighteen patients with extraocular muscle disinsertion did not have statistically different ΔIOPmax compared with 55 patients without extraocular muscle disinsertion (P = .72).

Comment. This study demonstrated a statistically significant trend of increased IOP of 8 mm Hg in eyes treated with Collaborative Ocular Melanoma Study–style iodine 125 brachytherapy that persisted while the plaque was in place but resolved by the first postoperative day. Ten patients (14%) experienced IOP increases of 15 mm Hg or more, and 23 (32%) required topical hypotensive therapy. These medications may minimize the IOP elevation associated with brachytherapy. Factors such as age, DM, plaque size or location, tumor height, and radiation dose do not serve as reliable indicators of who will experience these marked elevations in IOP. Given the number experiencing moderate IOP elevation and our inability to identify these patients preoperatively, regular IOP monitoring may be advisable for patients while undergoing iodine 125 brachytherapy.

Sandeep K. Bhatia, MD
Douglas J. Covert, MD, MPH
William J. Wirostko, MD

Author Affiliations: Retina Service of the Eye Institute, Medical College of Wisconsin, Milwaukee.

Correspondence: Dr Wirostko, Retina Service of the Eye Institute, Medical College of Wisconsin, 925 N 87th St, Milwaukee, WI 53226 (wirostko@mcw.edu).

Financial Disclosure: None reported.

Funding/Support: This research was supported in part by the Heed Ophthalmic Foundation, Cleveland, Ohio, and by an unrestricted grant from Research to Prevent Blindness, New York, New York.


Photoreceptor Recovery Following Laser Photocoagulation and Albendazole in Diffuse Unilateral Subacute Neuroretinitis

Diffuse unilateral subacute neuroretinitis is a rare condition that typically causes significant vision loss. Herein, we describe spectral-domain optical coherence tomographic (OCT) findings correlating with vision recovery following treatment of a patient with diffuse unilateral subacute neuroretinitis.

Report of a Case. A 45-year-old man reported having progressive visual decline, floaters, and photopsias in the left eye for 2 months. One month prior, he was noted to have...