Contact Lenses to Reduce Photophobia

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Introduction

Photophobia is associated with a great number of ophthalmic and neurologic conditions. Several of these, including migraine, traumatic brain injury, and benign essential blepharospasm can present without any ophthalmic signs. Many of these patients, are particularly sensitive to fluorescent and other artificial lighting sources.

The pathophysiology of photophobia is closely tied to trigeminal nociceptive innervation. Different nerves of V1 innervate many structures within the globe including the conjunctiva, cornea, sclera, and uvea. These nerves send their signals to the thalamus where painful stimuli are relayed for interpretation. Any painful stimulus to these nerves (e.g. in epithelopathy and uveitis) produces photophobia.

Pain is also likely mediated by melanopsin-containing intrinsically photosensitive retinal ganglion cells (IPRGCs) that project to the thalamus. These IPRGCs are found not only in the retina, but in the iris as well. It is likely that in converging on the thalamus, there is significant interplay between the IPRGCs and downstream synapses from the V1 nerves.

Case History

Demographics
28-year-old white female

Chief Complaint
Worsening photophobia to fluorescent light over a five year period.

History of Present Illness
Natural lighting does not cause discomfort, but fluorescent lighting conditions lead to migraine symptoms including headache, dizziness, nausea, confusion, and fatigue within 2-3 minutes.

Wearing hats to shade her eyes brings her partial symptomatic relief, but complete relief is only found when she exists fluorescent lighting.

She has undergone a great deal of ancillary testing including MRI’s and vertigo testing that have all been found to be unremarkable.

She has undergone considerable medical therapy to try to alleviate the light sensitivity including Topamax, Propanalol, Amitropyline, and lidocaine injections to the back of the head, neck and shoulders. No significant symptomatic relief has been effected.

Patient Medical History
Microscopic hematuria and fibrocystic breast disease.

Patient Ocular History
Minor trauma to left orbit as a child and spectacle wear for hyperopia and astigmatism.

Exam

<table>
<thead>
<tr>
<th>Distance VA(ce)</th>
<th>OD</th>
<th>OS</th>
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<tbody>
<tr>
<td>Pupils</td>
<td>20/20</td>
<td>20/20</td>
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<tr>
<td>EOMs</td>
<td>Full and smooth</td>
<td>Full and smooth</td>
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<tr>
<td>Color vision</td>
<td>8/8 Ishihara</td>
<td>8/8 Ishihara</td>
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<tr>
<td>Manifest Refraction</td>
<td>pl -1.00 x 180 (20/20)</td>
<td>pl -1.00 x 180 (20/20)</td>
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<tr>
<td>IOP</td>
<td>13</td>
<td>13</td>
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<tr>
<td>External evaluation</td>
<td>Normal</td>
<td>Normal</td>
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<tr>
<td>Slit lamp evaluation</td>
<td>Normal Clear media, No signs of ocular surface disease, retinal disease, or ocular inflammation.</td>
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Treatment and Course

The patient was fit with Kontur 55 soft hydrogel lenses from Kontur Contact Lens Co. The patient opted to be fit with plano lenses so that she could continue to wear her spectacles over top. Once finalized, unworn lenses were sent to Adventure in Colors for tinting with FL-41.

The same eye with a contact lens tinted with FL-41.

Discussion

Photophobia associated with fluorescent lighting that presents without obvious ocular signs of disease can present a treatment challenge. In such cases, ophthalmic lenses tinted with FL-41 should be considered. While relief is not universal, it is an reasonable first-step in a treatment protocol.

References