Custom tinted soft contact lenses for extreme photophobia in occult macular dystrophy

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INTRODUCTION

Photophobia is a common symptom for patients with either congenital or acquired macular pathology. Rod saturation, a normal phenomenon in photopic conditions, can be visually debilitating for a patient with minimal cone photoreceptor function. While tinted spectacle lenses and wrap-around sunglasses can lessen symptoms, they fail to block oblique or back-scattered light sources.

Tinted contact lenses can provide complete coverage of the cornea, thereby eliminating stray light and achieving symptomatic relief. Further, specific tints in the red, magenta, or amber range selectively absorb short wavelength light and transmit longer wavelengths, which have lower luminous efficiency and allow for better rod function. These tints can easily be incorporated into soft hydrogel contact lens materials.

PURPOSE

This case demonstrates the potential benefits of custom tinted soft contact lenses to provide relief from photophobia for patients with macular pathology.

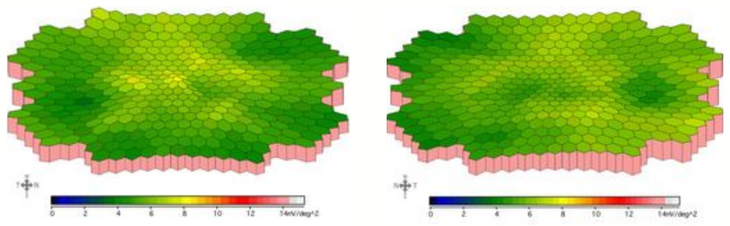

Fig 1a: Multifocal electroretinogram (EDS Inc, Burlingame, CA) amplitude density of patient's left and right eye. Note macular cone dysfunction DD>OS as evidenced by attenuated amplitudes.

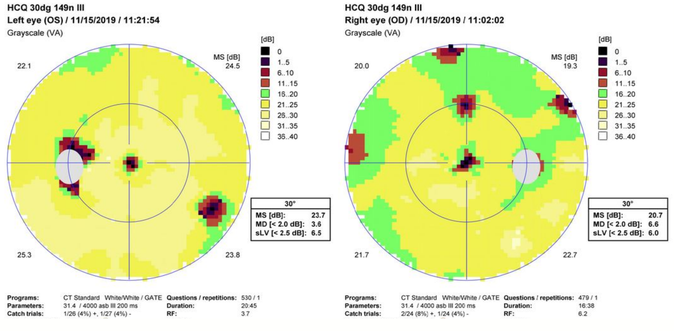

Fig 1b: Corresponding Octopus Visual fields (Haag-Streit USA, Mason, OH) demonstrating central scotomas OU.

CASE DESCRIPTION

- KD, 52yo white female with severe photophobia due to occult macular dystrophy.
- Referred by retinal genetics & low vision service. BCVA 20/100 OU, using adaptive devices and magnifiers.
- Presented to clinic using combination of red-tinted spectacle lenses, brown-amber clip-ons, low-transmittance neutral density wrap-around sunglasses, and brimmed hat to limit light exposure. Despite this combination, patient's symptoms kept her from spending time outdoors, using electronic screens, and other activities of daily living.
- KD was fit into custom methafilcon 55% lenses with 8.8BC, 14.5mm diameter, plano power, and "blue-blocker" tint across the entire diameter of the lens (Orion Vision Group, Marietta, Georgia) OU. Worn in combination with Rx spectacles.

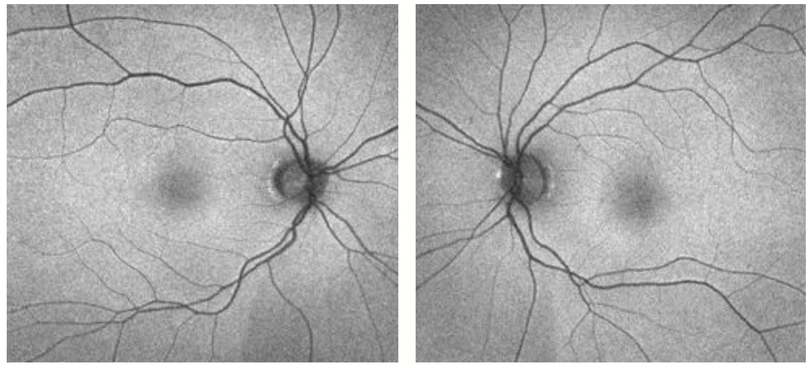

Fig 2: Fundus autofluorescence of patient KD, which appears normal other than slightly muted hypofluorescence of the macula. Note lack of drusen or pigmentary disruption, as would be seen in many other hereditary macular dystrophies.

RESULTS

- Upon follow-up, KD reports a drastic improvement in her quality of life due to photophobia reduction.
- KD no longer wears the clip-on brown-amber tint or sunglasses indoors. Outdoors, she still wears wrap-around neutral density sunglasses for additional protection. She reports that she is now able to use electronic screens and function comfortably in normal room lighting.
- Lenses are worn as daily wear and annual replacement. Nightly disinfecting performed with multipurpose solution. Preservative-free lubricants used over lenses as needed.

CONCLUSIONS

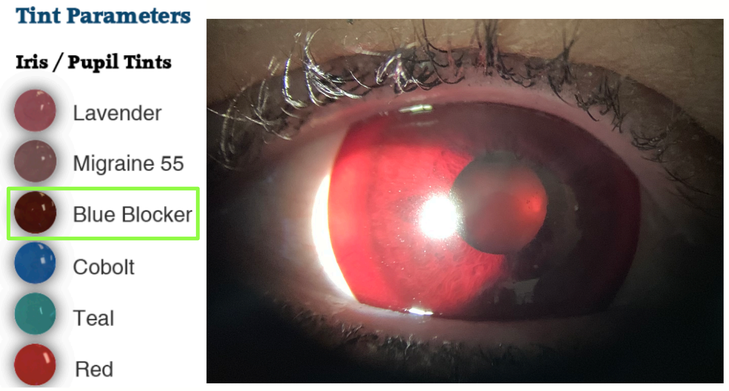

Fig 3: Left: a sampling of therapeutic tints offered by the manufacturer. Right: Patient KD wearing "Blue Blocker" custom tinted soft contact lens (Orion Vision Group, Marietta, GA) to block short wavelength light and reduce photophobia.

Red, magenta, and brown-amber tints reduce photophobia caused by retinal cone pathology by selectively transmitting long wavelength light and decreasing retinal illuminance.

Custom tinted contact lenses can provide significant additional reduction of stray light compared to spectacles alone, minimizing rod saturation and maximizing visual function.

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AKNOWLEDGEMENTS

The authors have no financial interest in any of the products referenced in this study, nor were the authors supported by any company referenced in this project. Supported by grant P30 EY010572 from the National Institutes of Health (Bethesda, MD), and by unrestricted departmental funding from Research to Prevent Blindness (New York, NY).