

CLINICAL IMAGES

Bilateral central scotomas following laser pointer misuse

Mark Xu HBSc, Tony Lin MD



Figure 1: Colour fundus photographs of the right (A) and left (B) eye of a 12-year-old boy with bilateral central blind spots. *Pigmentary changes in the macula and fovea of both eyes.

A 12-year-old white boy presented with a 3-day history of bilateral central blind spots after staring directly into the beam of a red laser pointer for about 1 minute with each eye. His Snellen visual acuity was 20/25 in his right eye and 20/20 in his left eye. Fundoscopy showed foveal and parafoveal pigmentary changes in both maculae (Figure 1). Automated visual field testing of the central 10 degrees was unremarkable, which suggested that the retinal damage affected less than 2 degrees of the visual angle. Optical coherence tomography of the maculae showed bilateral damage to the photoreceptors and retinal pigment epithelium in the fovea (Appendix 1, available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.130975/-/DC1). Treatment options were limited, and we decided not to actively intervene. Re-evaluation at 6 weeks showed bilateral changes to the retinal pigment epithelium, consistent with scarring of the foveal burns. The patient's vision returned to normal at 4 months, with no improvement in retinal findings.

Laser pointers have been implicated in eye injuries resulting in permanent vision loss, particularly among children.¹ It is prohibited to sell, lease or import hazardous, high-powered laser pointers (> 5 mW) in Canada.² Our patient had been able to obtain a laser pointer with a

measured output of 48 mW as a gift purchased overseas. His retinal injury likely resulted from a combination of a high-powered laser and long duration of exposure.

Proximity of injury to the fovea is the most important determinant of functional visual impairment.³ Foveal and parafoveal burns directly reduce visual acuity, whereas burns more distant from the fovea may produce a scotoma.³ Vision generally improves over days to months, and prognosis is excellent if the fovea is uninvolved.⁴ Visual cortex remapping may allow perceptual fill-in and improvement of the scotomas, as seen in computational modelling.⁵

References

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Affiliations: Schulich School of Medicine & Dentistry, Western University, London, Ont.

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Correspondence to:

Mark Xu,
mxu2014@meds.uwo.ca

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