

## BACKGROUND

### Handheld laser pointers

- Handheld laser pointers are commonly available for purchase in Australia or via the internet
- Lasers are classified by wavelength (400-700nm) or by power output (mW) and categorised by class:
  - Class 1 lasers < 1mW
  - Class 2 lasers = 1-5mW
  - Class 3 & 4 > 1mW<sup>1</sup>
- Commercially available laser pointers are Class 2 and available in red (635nm), green (532nm) and blue (445nm)<sup>1</sup>
- Importation and possession of laser pointers is regulated in Australia and laser pointers over 1mW are prohibited (for importation and possession). Difficulties arise when the power of the laser pointer is not labelled or the label is not consistent with the actual power emitted.
- There have been reports of permanent retinal injuries from high-powered handheld laser pointers greater than 5mW<sup>2,3</sup>
- Injury from transient exposure to low powered lasers is considered unlikely<sup>4</sup>

## REFERENCES

1. Law, S. *Laser classifications*. 2011.
2. Mainster, M., B. Stuck, and J. Brown, *Assessment of alleged retinal laser injuries*. Archives of Ophthalmology, 2004. 122 (Aug): p. 1210-1217
3. Ziahosseini, K., J. Doris, and G. Turner, *Maculopathy from handheld green diode laser pointer*. British Medical Journal, 2010. 340(c2982): p. 1261
4. Robertson, D., et al., *Laser pointers and the human eye*. Archives of Ophthalmology, 2000. 118 (Dec): p. 1686-1691

(The authors do not have any financial interest in the material presented)

## CASE REPORT

### Case history

- Healthy 15 year old boy presented for ophthalmic consultation complaining of decreased vision and central blur in his right eye for 3 weeks.
- Initially he denied a precipitating event but later revealed he noticed the blur after playing with a handheld laser pointer
- The laser was shone directly into his eye and was labelled '532 nm'. The exact power of the laser is unknown.

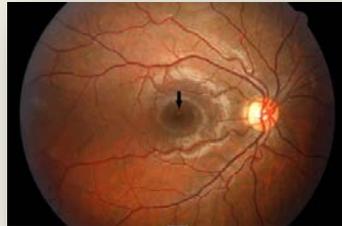


Figure 1

### First clinical presentation

- Visual acuity was 6/9 right and 6/5 left.
- No anterior segment abnormality.
- Small, pale sub-macular lesion at the fovea (figure 1) but no haemorrhage, sub-retinal fluid or exudates
- SD-OCT shows small focal defect in the sub-foveal RPE and IS/OS (figure 2).
- Also evident are inner retinal condensations along the track of the laser beam. The focal RPE injury allows a small area of greater beam penetration into the choroid and greater reflectivity.

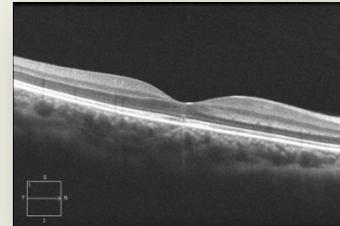


Figure 2

### Second clinical presentation

- Visual acuity RE improved to 6/7.5
- Central blur had shifted to the right
- SD-OCT shows the small focal defect in the sub-foveal RPE and the IS/OS line (figure 3)
- Inner retinal condensations have resolved but there is a track of decreased reflectivity left behind. There is no longer a thin shaft of increased choroidal reflectivity, indicating the focal RPE defect may have healed somewhat, presumably by metaplasia.

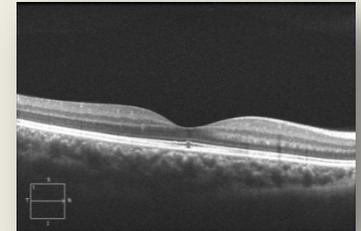


Figure 3

## CONCLUSION

We are unsure as to the power of the laser that caused the injury in this child, we do know that it was the same wavelength (523nm) as an Nd YAG laser or Argon laser used by Ophthalmologists. This case illustrates that whilst it has been reported that low powered handheld laser pointers are unlikely to cause permanent ocular injury, the rise in illegal importations and inaccurate labelling may in fact mean that children have access to higher powered lasers that could result in permanent and irreversible ocular injury.