

pathophysiological pathway. Perhaps poppers lower the threshold for retinal phototoxicity or otherwise trigger a biochemical cascade identical to that induced by photic damage.

Conflict of interest

The author declares no conflict of interest.

References

- 1 Davies AJ, Kelly SP, Naylor SG, Bhatt PR, Mathews JP, Sahni J *et al*. Adverse ophthalmic reaction in poppers users: case series of 'poppers maculopathy'. *Eye* 2012; **26**: 1479–1486.
- 2 Vignal-Clermont C, Audo I, Sahel JA, Paques M. Poppers-associated retinal toxicity. *N Engl J Med* 2010; **363**: 1583–1585.
- 3 Audo I, El Sanharawi M, Vignal-Clermont C, Villa A, Morin A, Conrath J *et al*. Foveal damage in habitual poppers users. *Arch Ophthalmol* 2011; **129**: 703–708.
- 4 Chen KC, Jung JJ, Aizman A. High definition spectral domain optical coherence tomography findings in three patients with solar retinopathy and review of the literature. *Open Ophthalmol J* 2012; **6**: 29–35.
- 5 Romanelli F, Smith KM, Thornton AC, Pomeroy C. Poppers: epidemiology and clinical management of inhaled nitrite abuse. *Pharmacotherapy* 2004; **24**(1): 69–78.
- 6 Schatz H, Mendelblatt F. Solar retinopathy from sun gazing under the influence of LSD. *Br J Ophthalmol* 1973; **57**(1): 270–273.

MAP Fajgenbaum

Ophthalmology Department, King's College Hospital,
London, UK
E-mail: markfajgenbaum@gmail.com

Eye (2013) **27**, 1420–1421; doi:10.1038/eye.2013.218;
published online 11 October 2013

Sir, Response to Fajgenbaum

We thank Dr Fajgenbaum¹ for his interest in our recent case series of maculopathy in poppers users² and for debate on this matter with respect to photic maculopathy.

The similarity of clinical signs in 'poppers maculopathy' patients with those described in some patients with photic maculopathy is intriguing and as was also demonstrated in Dr Fajgenbaum's case report. We doubt the suggestion that poppers inhalation could lead to hallucinations or drastically altered consciousness, resulting in entrancement with bright lights or the sun. The psychogenic effects of poppers are well documented, but do not, in our opinion, lead to this sort of behaviour. It is also recognised that poppers use

can be linked to abuse of other compounds, which may have more potent hallucinogenic effects. We also agree that as poppers are sometimes used in raves where exposure to unsafe use of laser lights is a potential risk, these matters need to be considered in the differential diagnosis of individuals with acquired foveal defects. To answer the question about substance abuse and exposure to light in our cases, a detailed drug and social history was taken. Cases were questioned about prolonged solar or other lights gazing and which was denied in all cases.

As we stated there were several features of our cases that support on the balance of probabilities evidence of causality of poppers maculopathy as based on the Bradford-Hill criteria. Mainster *et al*³ has provided helpful advice on assessment of alleged retinal laser injury patients and which can also in our opinion be extrapolated to alleged photic retinal injury. Furthermore, it is now increasingly recognised that the signs of alleged solar maculopathy on SD-OCT imaging are varied. As discussed in our paper, it is not possible to prove causality of poppers maculopathy and we agree that differential diagnosis of outer lamellar defects can be challenging⁴ and that a detailed history should be taken.

Conflict of interest

The authors declare no conflict of interest.

References

- 1 Fajgenbaum MAP. Is the mechanism of 'poppers maculopathy' photic injury? *Eye* 2013; **27**: 1420–1421.
- 2 Davies AJ, Kelly SP, Naylor SG, Bhatt PR, Mathews JP, Sahni J *et al*. Adverse ophthalmic reaction in poppers users: case series of 'poppers maculopathy'. *Eye* 2012; **26**(11): 1479–1486.
- 3 Mainster MA, Stuck BE, Brown Jr J. Assessment of alleged retinal laser injuries. *Arch Ophthalmol* 2004; **122**(8): 1210–1217.
- 4 Comander J, Gardiner M, Loewenstein J. High-resolution optical coherence tomography findings in solar maculopathy and the differential diagnosis of outer retinal holes. *Am J Ophthalmol* 2011; **152**(3): 413–419.

AJ Davies¹, SP Kelly¹, SG Naylor², PR Bhatt¹, JP Mathews³, J Sahni⁴, R Haslett³ and M McKibbin²

¹Royal Bolton Hospital, Bolton, UK

²St James's University Hospital, Leeds, UK

³H M Stanley Hospital, Betsi Cadwaladr University Health Board, St Asaph, UK

⁴Liverpool and Broadgreen University Hospitals NHS Trust, Liverpool, UK

E-mail: andrewjohndavies@doctors.org.uk

Eye (2013) **27**, 1421; doi:10.1038/eye.2013.220; published online 11 October 2013