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Response to "Comment on: Effectiveness and safety of accelerated (9 mW/cm^2) corneal collagen cross-linking for progressive keratoconus: a 24-month follow-up"

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We thank Dr. De Bernardo et al. for their interest and their insightful comments on our recently published paper on accelerated corneal collagen cross-linking (CXL) for progressive keratoconus [1].

We fully agree that, instead of ultrasound pachymetry (USP), Pentacam (Oculus, Wetzlar, Germany) should be used to assess the corneal thickness in patients with keratoconus. Indeed Pentacam was utilised during our study to evaluate the corneal thickness during the initial presentation, before CXL and the entire follow-up period. In addition Belin-Ambrosio Enhanced Ectasia Display—a unique feature available on Pentacam—was also used to aid the diagnosis in borderline cases (https://www.oculus.de/uploads/media/belin.pdf). In our study USP was only employed during the CXL procedure to ensure the epithelium-off corneal thickness was more than 400 microns before the start of ultraviolet A irradiation. It was not practical to send the patients for Pentacam imaging during the procedure as this facility was not available in our operating theatre. In addition performing corneal imaging on patients with epithelium-off in a non-sterile environment could potentially increase the risk of corneal infection. We believe that assessing the corneal thickness with Pentacam during CXL is not a routine practice in most treatment centres. Although USP may overestimate the corneal thickness in keratoconic eyes, a meta-analysis has shown that such difference was small, albeit statistically significant [mean 6.33 µm; 95% confidence interval (CI): 3.49–9.17] [2]. On a reassuring note, we did not observe any endothelial dysfunction or corneal decompensation following accelerated CXL.

We appreciate that the corneal volume can be assessed with Pentacam and may be used in combination with the optical data for evaluating and monitoring the progression of keratoconus [3]. However, this is not a commonly used parameter in many long-term CXL studies [4], and therefore this was not analysed in our study.

It is true that vector analysis is required to fully assess the astigmatic correction of a refractive procedure. However, like many other long-term studies [4, 5], CXL was employed to stabilise progressive keratoconus—which was demonstrated in our study—and not used as a means to correct astigmatism. As such we placed more emphasis on the magnitude than the axis component of astigmatism since an increase in astigmatism can often be observed in progressive keratoconus. We also thank Dr. De Bernardo et al. for highlighting the potential risk of bias from studying two eyes instead of one eye per patient. Although the number of bilateral cases was small in our study ($n = 4$), we have performed further analysis using the data of one eye per patient (the first eye was analysed in bilateral cases) for confirmatory purpose and we did not find any significant changes to our published results.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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Management of the photic sneeze reflex utilising the philtral pressure technique

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The photic sneeze reflex

The Photic Sneeze Reflex (PSR) is a neuro-ophthalmological phenomenon, consisting of sneezing in response to an external light stimulus. The PSR, aka Autosomal dominant Compelling Helio-Ophthalmic Outburst (ACHOO) syndrome, was first described by Aristotle in 350 BC [1]. PSR reportedly occurs secondary to a change in light intensity, typically at onset of light exposure, and increases with lacrimation or nasal irritability [2].

The pathophysiology of the PSR has not been clearly elucidated. The sneeze, or sternutatory reflex, involves an afferent arc from the upper anterior nose through the anterior ethmoidal branch of the ophthalmic division of the trigeminal nerve, and from the lower nose and orbit via the maxillary division [2, 3]. One proposed mechanism of the PSR includes optic-trigeminal summation in which persistent light exposure relaying signals via the optic and trigeminal nerves may lead to increased sensitivity in the maxillary rather than ophthalmic branch, resulting in a sneeze rather than photophobia. Alternatively, ocular sensory input could lead to activation of neighbouring neurons involved in the sneeze response due to parasympathetic generalisation [2].

There is no recognised management for PSR. A military report demonstrated that interference filters were ineffective, suggesting that PSR appears to be mediated by changes in light intensity, rather than wavelength [3].

When examining patients on the slit lamp, PSR may be an unpredictable challenge to the physical integrity of the patient-doctor relationship. For the Neurologist who may have his/her face in extreme proximity to the patient's face when using the direct ophthalmoscope, the PSR may prove infectious. Sneezing has also been reported to result in rib fractures in osteoporotic patients, spontaneous abortion, ruptured intracranial aneurysm, aortic dissection, intervertebral disc prolapse leading to quadriplegia, and death [4, 5].

Over 35 years, six patients who demonstrated PSR were examined in a suburban Ophthalmological practice. Five patients were males aged 25 to 81, with PSR for 6–20 years, and the sixth patient was an eight-week old female.

One patient offered a practical approach to minimising the PSR during clinical examination by utilising the Philtral Pressure Technique (PPT). This involved firm digital pressure applied by the patient's index finger transversely to the skin of the sub-philtral region, directed posterosuperiorly onto the maxilla (Fig. 1). This was successful in preventing

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