Apparent Sympathetic Response of Contralateral Non Lens Wearing Eyes After Overnight Lens Wear In The Fellow Eye

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Introduction
When contact lenses are worn on one eye different sympathetic responses have been observed in the contralateral non lens wearing eye.

1. Mandel, Harris, and El Hage observed corneal swelling in both eyes and when a soft lens was worn in one eye only:
2. Parsh measured increased oxygen consumption in both eyes after lens removal
3. However El Hage and Elron found no accompanying increase in corneal thickness
4. Parrish measured increased oxygen consumption in both eyes after lens removal
5. Sarver noted peripheral corneal staining in both eyes

Objective
To compare central corneal swelling and light scatter after 8 hours of sleep in eyes with and without contact lenses.

Methods
20 Participants: 10 females 10 males
Age 26.8 ± 7.5 years
No history of contact lens wear.
No ocular or systemic disease, no topical or systemic medications

Procedures
 Participants slept for 8 hours from 11 p.m. and were awakened at 7 a.m.
Participants wore lenses overnight in their right eyes only; left eyes served as the control.
Corneal thickness and light scatter were measured immediately following lens removal after waking and every 20 minutes thereafter for 3 hours.
The data were analyzed using repeated measures ANOVA.

Results

- This was a randomized double blind study where the lenses were worn on two different nights.
- Participants wore lenses overnight in their right eyes only; left eyes served as the control.
- Baseline measurements were taken at 4 a.m.
- Participants slept for 8 hours from 11 p.m. and were awakened at 7 a.m.
- Corneal thickness and light scatter were measured simultaneously following lens removal after waking and every 20 minutes thereafter for 3 hours.
The LoDk controls showed the same trend as corneal swelling, i.e. more light scatter than the HiDk control at lens removal and up till 40 minutes though the difference was not statistically significant (paired t-test p=0.024).

Conclusion
To a degree, corneal swelling and light scatter in the contralateral control eyes appears to be linked with the swelling and scatter of the fellow lens wearing eye. Because the same apparent effect was demonstrated by two different methodologies, this may reflect either an unusual sampling coincidence or a real though unexplained sympathetic physiological response.

References
Harris MG, Mandel RB. Contact lens adaptation: somatic theory. Am J Optom 1985; 196-202

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