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***In Vivo* Confocal Microscopy Demonstrate Changes of the Corneal Epithelium in Patients with Herpes Zoster Ophthalmicus**

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Dear Editor

We read the correspondence by Mocan et al. with great interest and appreciate the opportunity to further expand on our study and clarify their concerns. In order to avoid redundancy to our previously published paper focusing on subbasal nerve changes, we did not repeat these results and focus on epithelial changes as they correlate to corneal sensation that is of greater clinical value. Our previous data suggests that the cornea possesses a significant neural reserve. Both corneal sensation loss and epithelial cell changes are not observed unless close to two thirds of subbasal nerves have diminished. This is corroborated by the fact that contralateral eyes in our herpetic patients demonstrate no change in epithelial cells, despite corneal nerve loss. Further, epithelial cell changes appear with functional, and not early morphological loss, of nerves as measured by corneal sensation. Thus, the main outcome measures in our recent abstract do not include nerve analysis as erroneously stated by Mocan et al.

We thank to authors bringing the issue of reproducibility of superficial epithelial cell density and the effect of fluorescein dye to our attention. While these cells are more difficult to visualize in normal eyes, they can be easily visualized in patients with ocular surface disease, such our patient cohort. In order to address this issue further, we had modified our standard imaging approach and performed a second scan that is obtained for the epithelium, using sections of 3µm, instead of the standard 7µm, as stated in our methods section. Furthermore, the analysis is routinely performed by 2 masked observes to ensure reproducible image analysis. Regarding the fluorescein dye, we completely agree with the authors that adding dye may change image characteristics of cells, and we routinely perform *in vivo* confocal microscopy (IVCM) prior to vital dye application.

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Changes in keratocytes and nerve density have been demonstrated in several previous reports, including patients after corneal transplantation and refractive surgery, Fuchs' endothelial corneal dystrophy, keratoconus and patient with neurotrophic keratopathy. Given the lack of abnormal keratocyte density in our cohort, there was no relationship to corneal nerve density, and thus the role of keratocytes in patients with herpes zoster, if any, remains to be elucidated. Regarding endothelial cell changes in our cohort, we have currently a manuscript under review and hope to report these interesting findings soon.

As the authors correctly state, neurotrophic keratitis can result in persistent epithelial defects. Identification of patients at risk is of great importance, as the therapy in these patients can be extremely difficult. Our study does clearly demonstrate that despite the lack of epithelial defects, IVCN allows for quantitative assessment of epithelial cell alterations that correlate with functional nerve changes. We agree that correlating the bio-microscopical findings with IVCN results at different stages of neurotrophic keratopathy may assist in understanding the progression of this debilitating disease. In fact, longitudinal studies are currently underway, assessing the utility of IVCN findings as potential prognosticators to identify patients at risk for neurotrophic ulcers and other diseases of the ocular surface.

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