Abstract:

PURPOSE: To investigate the mean values and standard deviations as well as the reliability of consecutive examinations of central and peripheral corneal thickness measurements according to age using the Pentacam rotating Scheimpflug camera (Oculus, Inc.). SETTING: Department of Ophthalmology, University of Heidelberg, Heidelberg, Germany. METHODS: Seventy-six healthy volunteers were enrolled in a clinical prospective study. Three consecutive Pentacam measurements of 1 eye per subject were taken. Evaluated were the central corneal thickness (CCT), corneal thickness at 4 peripheral points (3.0 mm superior, inferior, nasal, and temporal), and the thinnest point of the cornea. The volunteers were then assigned to 3 groups to assess the influence of increasing age on the study parameters. RESULTS: The mean age of the subjects was 46.6 years +/- 16.8 (SD). The mean CCT was 539.62 +/- 31.87 microm. Peripherally, the corneal thickness was between 11% and 19% higher than centrally, with the superior cornea being the thickest followed by the nasal, the inferior, and the temporal cornea. The thinnest point was located in the inferotemporal quadrant in 92% of eyes and in the superotemporal quadrant in 8%. There was no correlation between age and corneal thickness. Minor mean standard deviations of consecutive measurements were noted in the corneal center (4.33 microm),
increasing significantly toward the periphery (mean 8.31 microm). Increasing age was not associated with decreasing reliability. CONCLUSIONS: Using the Pentacam, it was possible to acquire information about corneal thickness across the entire cornea. No correlation was found between increasing age and change in peripheral or CCT. Good reliability was noted for pachymetry measurements decreasing slightly toward the periphery, which was independent of age.