Central Corneal Thickness and Optic Disc Hemorrhages: The Beijing Eye Study

Central corneal thickness (CCT) has been described to be a predictor for the development of primary open-angle glaucoma and the progression of glaucomatous visual field defects in the Ocular Hypertension Treatment Study and other investigations. Corroborating, a previous investigation by Herndon and colleagues found that CCT was the most consistent predictor of the degree of glaucomatous damage in their hospital-based cross-sectional study. However, CCT also influences application tonometry, so it has remained unclear whether the reported findings are due to the dependence of intraocular pressure measurements on CCT and a corresponding selection artifact of patients or whether a thin cornea may predispose the eye to a higher glaucoma susceptibility. Since optic disc hemorrhages can indicate progression of glaucomatous optic neuropathy and because most of the previous investigations were hospital-based studies with a possible referral bias, it was the purpose of our population-based study to assess whether CCT influences the development of disc hemorrhages.

Methods. The Beijing Eye Study is a population-based cohort study in northern China. The medical ethics committee of the Beijing Tongren Hospital approved the study protocol and all of the participants gave informed consent according to the Declaration of Helsinki. Of 5324 individuals aged 40 years or older residing in the study area, 4439 individuals (2505 women) participated in the eye examination (response rate, 83.4%) in the year 2001 as described in detail previously. In the same population, an eye examination with slitlamp optical coherence tomography was undertaken. Only one randomly selected eye was taken for statistical analysis. Glaucoma was defined by the appearance of the optic nerve head as described recently.

Results. Of the 3251 subjects, CCT measurements were available for 3100 subjects (95.4%); 32 of them (1.0%) showed an optic disc hemorrhage. The CCT was slightly greater in the hemorrhagic group (mean [SD] CCT, 569.5 [33.8] μm) than in the nonhemorrhagic group (mean [SD] CCT, 556.0 [33.0] μm) (P = .03; after application of the Bonferroni method to correct for performing multiple statistical analyses, P = .06). Including glaucomatous eyes (n = 77) only, the CCT did not vary significantly between the hemorrhagic group (n = 5 eyes [6%], mean [SD] CCT, 571.8 [36.1] μm) and the nonhemorrhagic group (n = 72 eyes [94%], mean [SD] CCT, 549.3 [31.4] μm) (P = .24), with the hemorrhagic group having slightly thicker corneas than the nonhemorrhagic group.

Advisory Board:Marnix van Ridder, MD, PhD

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Comment. The findings point against a thin cornea as an associated factor for disc hemorrhages in glaucoma.²,³ Because disc hemorrhages are usually associated with glaucoma progression, the results do not sup-