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Trans-epithelial cross-linking for treatment of progressive keratoconus in eyes with thin cornea

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Abstract

Purpose

To evaluate the visual, refractive and corneal tomographic effects of trans-epithelial cross-linking (TE-CXL) in patients with progressive keratoconus (KC) and thin cornea.

Methods

Were included in this study all consecutive patients affected with progressive KC and thin cornea (thinnest < 400 microns) that have been treated with TE-CXL. Visual acuity, refraction, corneal tomographic parameters as assessed by Orbscan II, and endothelial cells density (ECD), at baseline and at last visit (minimum follow up: 2 years) were compared. KC progression was considered an increase in mean K of at least 1.5 D

Results

Were treated with TE-CXL 33 eyes of 33 patients (age 22-31 years). At baseline mean corrected distance visual acuity (CDVA) was 0.22±0.11 logMAR; SimK max was 53.3±3.7 D, and SimK min was 48.2±2.2 D. Eight eyes had stage I KC, 15 a stage II KC, 10 a stage III KC. Mean corneal thickness at thinnest point was 380±20 microns. After a mean follow-up of 31±4 months (range 25-38), a KC stabilization (with CDVA increase) was detected in 28 eyes, while a KC progression (with unchanged CVDA) was seen in 5 eyes, that were retreated. Eyes with KC progression had a greater baseline SimK' Astigmatism (7.2±1.9 D vs 4.8±2.5 D, p=0.046) than eyes without KC progression. A 4.1% reduction in mean ECD was detected (from 2946±239 cells/mm^2 to 2829±292 cells/mm^2).

Conclusions

TE-CXL stabilizes keratoconus in most of eyes with thin cornea (thinnest <400 microns), for which standard CXL is contraindicated, with a limited corneal endothelium damage.