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Comparative study of results of standard corneal collagen crosslinking vs corneal crosslinking by iontophoresis of riboflavin

Guzel Bikbova^{1,2} and Mukharram Bikbov¹

¹Ufa Eye Research Institute, Russia

²Chiba University Graduate School of Medicine, Japan

Purpose: To estimate the results of standard corneal collagen crosslinking (CXL) and transepithelial CXL by iontophoresis of riboflavin.

Material & Methods: CXL was performed in a series of 156 eyes of 126 patients with keratoconus I-III Amsler classification (149 eyes) and post LASIK keratoectasia (7 eyes). Depending on the method of CXL patients had been divided into two groups: I group-77 eyes with standard CXL, II group-79 eyes with transepithelial CXL by iontophoresis of riboflavin. I group had been treated with epi-off technique using 0.1% riboflavin solution with dextran T 500. In the II group the 0.1% riboflavin hypotonic solution was administered by iontophoresis using galvanizator (Potok-1, Russian Federation) for 10 minutes prior surface UVA irradiation. In both groups UVA irradiation (370 nm, 3 mW/cm²) was performed at a 5-cm distance for 30 minutes. Follow up period was 24 months

Results: Confocal microscopy showed that in both groups anterior corneal stroma had a “honeycombed” appearance with reduced number of keratocyte’s nuclei, however repopulation of stroma and regaining its normal configuration completed within 6 months in I group and in 3-4 months in II group. Preand postoperative endothelial cell density remained unchanged within 2765±21,15 cells/mm². CXL in both groups resulted in a decrease of average keratometry from 47.65±0.93 D to 45.58±0.65 in I group and from 47.16±1.03 D to 45.76±0.98 in II group 2 year after the procedure. Demarcation line in I group was observed at the depth 288±10 mk and in a II group at 154±22 mk (from 14 days up to 1 month after CXL).

Conclusion: Transepithelial CXL by iontophoresis is as effective as standard CXL and can be recommended as a method of choice for patients with corneal thickness less than 400 mk.

Biography

Guzel Bikbova has completed her PhD from Scientific Research Institute of Eye Diseases Russian Academy of Medical Science, Moscow, Russia. She worked in Ufa Eye Research Institute and now is obtaining another PhD in Chiba University, Japan as scholarship holder from Ministry of Education, Culture, Sport and Technology in Japan. She has published 12 papers in peer reviewed journals and has 4 patents of Russian Federation.

gbikbova@gmail.com

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