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Expression of TGF-b1, TGF-b2 in blood serum after corneal UV cross-linking in patients with keratectasia

Azat Khalimov[1,2], **Galina Drozdova**[2], **Mukharram Bikbov**[1] and **Valery Kataev**[3]
[1]Ufa Eye Research Institute, Russia
[2]Peoples´ Friendship University of Russia, Russia
[3]Bashkir State Medical University, Russia

Introduction: Collagen cross-linking (CXL) with UVA irradiation 370 nm and 0.1% riboflavin stabilizes the pathological process in the cornea. Changing levels TGF-b1, TGF-b2 in blood serum of patients with keratectasia may cause an unfavorable outcome of the disease and CXL treatment.

Aim of the study: To investigate the expression of TGF-b1 and TGF-b2 in blood serum of patients with keratectasia after CXL treatment.

Methods: The study enrolled 25 patients with keratectasia (10 women, 15 men; mean age 30 years). Control group has 14 healthy people. CXL treatments were performed with deepitelization of cornea (UVA irradiation 5.4 J/cm2, 30 mins, with 0.1% riboflavin/20% dextran). The levels of TGF-b1 and TGF-b2 in blood serum of patients has been evaluated in 3, 7, 14 days after UV cross-linking of the cornea using enzyme-linked immunoassay.

Results: The analysis showed no gender differences in the content of cytokines. Patients with keratectasia had a significant ($p<0.05$) increase in the level of TGF-β1 in serum to 172.22±20.2 pg/ml, versus 42.7±3.8 pg/ml in control; TGF-β2 was 126.4±17.7 pg/ml vs. 210.44±24.2 pg/ml. TGF- β1 in the blood serum 3 days after CXL continues to increase 198.46±23.8 pg/ml; 14 days after CXL - 295.86±31.4 pg/ml. TGF- β2, 3 days after CXL is 246.34±12.7 pg/ml; 14 days after CXL - 249.57±18.5 pg/ml.

Conclusions: The pathological process associated with the development of keratectasia, accompanied by a systematic increase in the level of TGF-β1 and less pronounced increase in TGF-β2. Up to 14 days after CXL treatment the concentration of TGF-b1 in the blood serum continues to increase, with a slight increase of TGF-β 2.

Biography

Azat Khalimov is the Head of Research and Production Department of the Ufa Eye Research Institute. He graduated from Bashkir State Medical University, Candidate of Science (Biology) in 1988. He has published more than 150 research papers and is an author of 25 patents of the Russian Federation.

azrakhal@yandex.ru

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