EVALUATION OF NON-VIABLE CORNEAL GRAFTS FROM THE HUMAN TISSUE BANK IN THE REPUBLIC OF MODOVA

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Introduction: Corneal preservation methods with the preservation of a maximum number of viable endothelial cells has been and remains one of the challenges of Eye Banks worldwide. There are three main approaches to the preservation and storage of corneas: the viable method, i.e. the culture medium, and non-viable – hypothermia, cryopreservation and lyophilization. Corneal preservation methods used in the Human Tissue Bank of the Republic of Moldova, such as lyophilization, being a non-viable method, in which cell viability is lost, only the architectural shell of the transplanted collagen fibers are preserved, which can be recellularized, only the epithelial layer. They are used in tectonic keratoplasties to restore the integrity of the sclera or some portion of the cornea. The most used preservation method is the tissue culture medium "C", Eussol "C" and Cary "C" with storage temperatures of 31° C and a duration of one month. During 11 years of activity, 435 corneas were transplanted, of which 4.5% (20 corneas) were lyophilized and transplanted through keratoplasty with tectonic purpose.

Material and methods. Morphological evaluation of non-viable cornea in culture media, lyophilized and preserved in glycerol in 20 rabbits and humans.

Results. Rabbit corneas preserved in 30, 50 and 80% glycerol at pH 7.4 and subsequently frozen at 80^{o} C histologically by immunohistochemical staining with AE1/AE3 show disorganization of connective tissue architecture with fragmentation. Microelectronic scanning of freeze-dried human corneas determines the structural integrity of the connective tissue shell with layer persistence. Non-viable corneas from histological culture media by hematoxylin-eosin staining show intense edema of all layers predominantly in the stroma.

Conclusion. (1). The most preferred non-viable method of preserving the cornea is lyophilization with the maintenance of structural integrity, sterility and validity up to 2 years; **(**2). The glycerol preservation method at temperatures of - 800 C shows a destruction of the connective tissue casing due to the formation of ice crystals. **(**3). The non-viable preservation of the cornea shows a deep swelling of the layers and for its elimination, the Carry "C" detumescence medium is needed, which maintains the validity period of 2 months, being an expensive method.

Key words: preservation medium, validation, connective tissue.

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