

ABSTRACT

Stem Cell Therapy – Role in Corneal Diseases: Mini Review

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Abstract: Stem cell therapy is emerging as a potentially revolutionary new way to treat ocular surface disorders. Stem cells are a kind of template cells for the body, producing various tissues and cell types. Embryonic stem cells are undifferentiated cells that can develop into any type of adult cells in an appropriate environment or culture. These are derived from embryo 4-5 days after fertilization. An adult stem cell is an undifferentiated cell found among differentiated cells in a tissue or organ; can renew itself and can differentiate to yield the major specialized cell types of the tissue or organ. Stem cells for the cornea reside in the limbal basal epithelium. The limbal palisades of Vogt and the interpalisade rete ridges are believed to be repositories of stem cells. Limbal stem cells are crucial in maintaining the cell mass of corneal epithelium under normal conditions and play an important role in corneal epithelial wound healing. Damage to stem cells results in conjunctivalization of cornea. Corneal Stem Cell Deficiency can be best confirmed histologically by the use of impression cytology. Ocular surface reconstruction techniques have advanced considerably during the last few years with the advent of amniotic membrane transplantation. The latest approach to limbal stem cell transplantation is based on the principle that under suitable laboratory conditions, a small population of limbal stem cells may be expanded from a small biopsy using 3T3 feeder layer or amniotic membrane for subsequent reconstruction of the ocular surface. *Al-Shifa Journal of Ophthalmology* 2007; 3(2): 42-48 © Al-Shifa Trust Eye Hospital, Rawalpindi, Pakistan.