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Stem cells therapy: Intravitreal regenerative effect, in the retinal-neuronal degenerative diseases

Stem cells have been studied in several fields of Medicine, and their applications are not too far from the clinical practice. Retinal impairment by neuronal death has been considered incurable due to the limited regenerative capacity of the central nervous system. The capacity of stem cells to regenerate tissues, as well as their plasticity makes them a potential source for retinal repair. The stem cells are a great promise for the therapy of inherited retinal disorders and retinal-neuronal degenerative diseases, such as retinitis pigmentosa and allied retinal dystrophies, which can result in blindness. So far, the results of a few studies are consistent with the belief that cell-based therapies using mesenchymal stem cells may be effective when it comes to retinal damaged tissue repair.

Objective: To evaluate the regenerative effect of typified stem cells after intravitreal injection into rabbit eyes with chorioretinal damage induced by diode laser photocoagulation.

Participants: Thirty New Zealand white male rabbits, with an average weight of 3.5 kg, aged 5 to 6 months.

Intervention: Stem cells were implanted by intravitreal injection. The regenerative action of these cells was studied in chorioretinal lesions induced by red diode 670 nm laser photocoagulation. The stem cells were implanted 24 hours after laser photocoagulation. The regenerative activity of stem cells was studied in the chorioretinal tissue 90 days later. The amount of retinal recovery induced by stem cells implantation was compared with that of one control group formed by 20 rabbits which were similarly treated by laser photocoagulation and did not undergo stem cells implantation.

Results: A recovery of 90% of the chorioretinal burns was observed in 23 rabbits (n=45 healed burns); a recovery of 50% of the chorioretinal burns (n=25) was observed in 2 rabbits; 42% (n=21) recovery was observed in three rabbits and 36% (n=18) in 2 rabbits.

Recent Publications

1. Blatt A, Cotter G, Leitman M, Krakover R, Kaluski E, Milo Cotter O et. al. (2005) Intracoronary administration of autologous bone marrow mononuclear cells after induction of short ischemia is safe and may improve hibernation and ischemia in patients with ischemic cardiomyopathy. Am. Heart J. 150(5):986.
2. Singla D K, Hacker T A, Ma L, Douglas P S, Sullivan R, Lyons G E et. al. (2005) Transplantation of embryonic stem cells into the infarcted mouse heart: formation of multiple cell types. J. Mol. Cell Cardiol. 40(1):195-200.
3. Pallini R, Vitiani L R, Bez A, Casalbore P, Facchiano F, Di Giorgi Gerevini V et. al. (2005) Homologous transplantation of neural stem cells to the injured spinal cord of mice. Neurosurgery. 57(5):1014-1025.
4. Vilas Boas F, Feitosa G S, Soares MBP, Pinho Filho J A, Mota A, Almeida A J G et. al. (2004) Transplantation of bone marrow cells into the myocardium in a patient with heart failure secondary to Chagas disease. 82(2):181-187.
5. Balsam L B, Robbins R C (2005) Haematopoietic stem cells and repair of the ischaemic heart. Clin Sci (Lond). 109(6):483-92.

Biography

Luis E Abad is a Chair and Distinguished Professor of Ophthalmology at Ballsbridge University, President at Abad Eye Research Group, Dominica. He is Honorable Member Council, Board of Quality Standards, UK, Doctorate in Genetics and Master of Business Administration, Bircham International University, Spain. He is an Ophthalmologist and Vitreoretinal Surgeon, Doctor in Medicine, National University of Cordoba, Argentina. He has several awards to his credit: Doctor of Philosophy, International Philosophical Institute, India, Doctor of Letters in Medicine, Maha Sastra University, Cambodia, Doctor of Sciences in Ophthalmology, Ballsbridge University, Dominica. He received Honorary Fellow, Institute the Chartered Professionals, UK; Doctor of Sciences, Research Training & Treatment Institute, India. Marquis Who's Who in America, New York, USA. He is Fellow of the New York Academy of Medicine, USA. He was honored with Doctor Honoris Causa in Ophthalmology, Bircham International University, Spain. He is also the author of seven books of ophthalmology with more than sixty scientific publications in international journals. His patents include: surgical system for the retinal detachment and Intrascleral microimplant of slow Ranibizumab release, Spain.

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