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

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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 five to six 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 two rabbits; 42% (n=21) recovery was observed in three rabbits and 36% (n=18) in two rabbits.

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