Cell based therapies in retinal diseases

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Background
Degenerative retinal diseases, including age related macular degeneration, glaucoma, and hereditary retinal dystrophies are major causes of blindness. The principal defect in these diseases is cell loss which is amenable to both cell based neuroprotective and neuroregenerative therapies. To briefly review the lines of research and potential candidates for cell based therapies among retinal diseases.
Methods:
Review of current literature on stem cell therapies in retinal diseases.
Results:
As retinal degenerations progress slowly, they are potential candidates for neuroprotective treatments, one of the first being tested clinically is the cell capsule delivery of ciliary neurotrophic factor. Neuroregenerative therapies including stem cell transplantation, is still in its infancy and there are many hurdles to successful neural cell replacement from cell reproduction, to delivery, on sight survival and functional integration with adult tissue, which must still be overcome. The first clinical trials on stem cell replacement therapies have begun with embryonic stem cells being injected subretinally to remedy age related macular degeneration and hereditary retinal diseases. Epiretinal transplantation of neural progenitor cells and mesenchymal stem cells has so far not been very promising regarding integration of the transplanted cells with the mature retina.
Conclusion:
Treatment of the so far untreatable degenerative retinal diseases will hopefully be available in the near future with cell based therapies.

Key words: Age related macular degeneration, Embryonic stem cells, Retinal degenerations, Retinal dystrophies, Mesenchymal stem cells, Neural stem cells.

Oral Presentation

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