

Parkinson's Disease

Neurological | Bone Marrow, Cord Blood & Adipose



Parkinson's disease is caused by a lack of dopamine due to nerve cell death in the brain. The cells are constantly sending signals, resulting in a higher than normal concentration of calcium in the cells, possibly increasing the metabolic rate of the cells and leading to cell death. Death of these cells affects the motor function of the muscles, and has a cumulative effect, with the outward effects usually only apparent when 70% or more of the cells have been lost. The most common physical complications are associated with dysphagia or swallowing. Emotional complications arising from changing hormone balance, vision, sleep and mental acuity decline are also symptomatic – all of which can lead to increased care needs.

Parkinson's disease is not fatal, but reduces longevity and can lead to severe incapacity. The older the person at the onset of Parkinson's, the quicker the disease progression. It has been estimated that 1 in 20 people with Parkinson's has a genetic cause for the disease. It usually affects those over 50 years of age, but 1 in 20 are under 40.

127,000 people in the UK have this condition, costing between £25,630 and £62,147 per person per annum. 93% of this cost is non-medical professional care and indirect informal care costs.

Cell Line

Currently, all stem cell work is focused on understanding and modelling the disease, with a view to being able to pinpoint treatments and assess their efficacy. The ability to produce dopamine-producing cells and transplant these to the brain seems to be the most promising avenue of research.

The exact mechanism to ensure these cells are retained and successfully integrated into the brain is still being worked on, alongside technical mechanisms for operating on the brain without creating unwanted side effects.

Future Work

Some reports indicate that clinical trials for the transplantation of such cell cultures may be starting in 2014 or 2015.

Summary

At present no treatments are available for this disease. It is hoped that the cell line work in modelling this disease will lead to therapies in the future.

References

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