

Embryonic stem cells in neurology – current clinical transplantation trials in Parkinson’s (PD) and Huntington’s (HD) disease

Células-tronco embrionárias em neurologia – ensaios clínicos atuais sobre transplante em doença de Parkinson e doença de Huntington

Dear Editors,

We read with interest the manuscript published by Batista et al.¹. These authors added very important information regarding the field of restorative neurosurgery. Here we want to extend the scope of current perspectives by further recent and interesting information on clinical trials in Parkinson’s (PD) and Huntington’s (HD) diseases. Since 1987 an estimated 450 patients with PD and HD have been transplanted stereotactically with human fetal mesencephalic tissue^{2,3}.

Clinical outcome has been variable, ranging from case reports of PD patients dropping out medication following transplantation up to negative results in two prospective FDA-approved randomized double-blinded sham-controlled trials. Analyzing the results across studies, it became apparent that accurate, unambiguous processing was needed for efficient cell isolation, transplantation and follow up, in performing centers, instead of using different protocols; however few efforts have been made to standardize the procedure.

In 1994 a Network of European CNS Transplantation And Restoration (NECTAR) was founded, aimed at a concerted effort to develop efficient, reliable, safe and ethically acceptable transplantation therapies for neurodegenerative diseases, in particular Parkinson’s and Huntington’s disease (nectar-eu.net). NECTAR’s aimed to bring together European groups who share the common goal of protecting, repairing and restoring the central nervous system damaged through degenerative disease or injury, it celebrated its 20th anniversary in 2010 in Freiburg at the annual network conference.

Many NECTAR members are involved in TRANSEURO – a European FP7 research consortium created with the principal objective of developing an efficient and safe treatment method for Parkinson’s disease suffering patients using fetal cell based transplants, starting a new human transplantation trial.

In accordance with the TRANSEURO PD transplantation program, selected patients should be aged between 30 and 60 years, be in an early to moderate disease’s stage (more than 4 but less than 10 years) with a DOPA or Apomorphine significant positive motor response and no serious co-morbidities. A comprehensive list of criteria can be found in transeuro.org.uk.

We presented last year a comprehensive guide of the necessary pre-operative preparation, and a detailed surgical protocol with state-of-the-art technical modalities for PD and HD neuronal transplantation². The clinical experience gained in PD has been transposed to Huntington’s disease. A Phase II multi-centric European study for the treatment of HD with intracerebral fetal neuron transplantation was initiated in 2001⁴. This ongoing study is designed to assess the clinical results of neuroreplacement in a total of 80 HD patients; of which, about half of the transplantations have already been performed with 22 of those patients transplanted by now in Freiburg University⁵.

In our clinical experience fetal brain transplantation is a safe surgical procedure. Adverse effects are mostly related to prolonged immunosuppression (i.e. systemic repetitive infections). However, potential risks of transplantation therapy for neurodegenerative diseases need to be taken into account when aiming to perform intracranial transplantation studies. Studies in humans are still experimental and human fetal striatal transplantation (HFST) is not yet a standard treatment since clinical trials using current protocols have not yet been concluded to establish current conclusions².

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