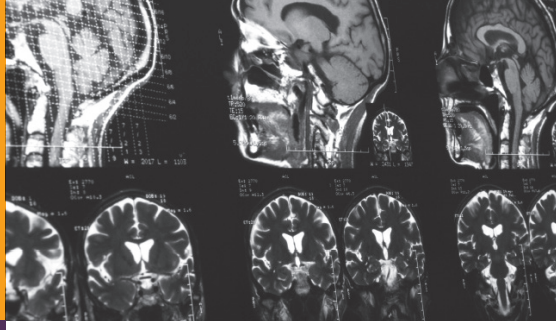
Stroke



Neurological | Umbilical Cord Blood

There are two primary causes of stroke – bleeding on the brain and a clot in the artery supplying blood to the brain. Both result in the loss of oxygen to brain tissue. Prevention is the most effective and common treatment, including medicine and lifestyle changes to reduce risk factors associated with stroke.

120,000 people experience a primary stroke in the UK every year, and a further 30,000 have a subsequent stroke. In total, it is estimated that there are 1 million stroke sufferers in the UK, 50% of whom rely on other people for day-to-day living activities. With most sufferers over the age of 65, it is the third most common cause of death in the UK and the largest cause of disability. Severity of the disease varies and depends on the extent of damage suffered by the brain.

The average cost is £15,000 to £30,000 per patient per annum for the first 5 years post stroke. Long-term costs can exceed £135,000 depending on the longevity of the stroke victim. The overall cost to the UK per year is £7 billion.

Cell line

ReNeuron have developed a cell line to treat stroke victims that is currently being used in the UK. Presently no adverse effects have been seen, but the full data is not yet available.

Animal studies

Much work has been done in rats as a model of the disease to look at the effects of implanting neural-derived cells into the affected brain. This shows that direct injection of cultured cells to the lesion can be effective.

Summary

A meta-analysis of the animal model data available shows that early treatment with autologous cells is beneficial for structural outcomes. However, functional outcomes are not time-dependent and allogeneic cells can be more effective.

References

http://www.ninds.nih.gov/disorders/stroke/stroke.htm

http://clinicaltrials.gov/ct2/show/NCT01151124 Pilot Investigation of Stem Cells in Stroke (PISCES).

http://www.ninds.nih.gov/research/stem_cell/index.htm

http://www.ncbi.nlm.nih.gov/pubmed/22213183
Stem Cells. 2012 Apr;30(4):785-96. doi: 10.1002/stem.1024. Implantation site and lesion topology determine efficacy of a human neural stem cell line in a rat model of chronic stroke. Smith EJ, Stroemer RP, Gorenkova N, Nakajima M, Crum WR, Tang E, Stevanato L, Sinden JD, Modo M.

http://www.nao.org.uk/idoc.ashx?docId=11ED54B8-BABF-4C0E-AEFC-2A09B55DE4AE&version=-1
Economic burden of stroke in England Division of health and social care research Saka et al.