

Cerebral Palsy

Neurological | Umbilical Cord Blood



Cerebral palsy is a chronic long-term condition whereby muscle control is affected due to brain cerebrum damage as a result of asphyxia (lack of oxygen). This can occur prior to the birth as a result of:

- ◆ Reduction in the blood supply to the white matter as a consequence of infection, maternal low blood pressure, premature birth and cocaine use.
- ◆ Abnormal brain development due to a genetic abnormality, infection or trauma.
- ◆ Intracranial haemorrhage due to stroke, maternal high blood pressure or infection.
- ◆ Blood supply interruptions during birth such as the cord being around the neck.

Cerebral palsy can also occur after birth, usually as a result of infection or traumatic injury.

Cerebral palsy affects 1 in 500 babies in the UK annually, and is usually associated with other compounding medical conditions such as epilepsy. There are currently 110,000 sufferers in the UK, costing the NHS £4 billion per year to treat and care for. There is also the cost of lost income for carers, out of pocket expenses, psychological effects and the impact on productivity.

Clinical Trials

There are currently nine clinical trials listed using cord blood for treatment of cerebral palsy. Two of the most prestigious research institutes

– Duke University and Georgia Health Sciences Institute – are working on clinical trials in this area (NCT01072370 and NCT01147653). A very good summary paper has been written by Titomanlio et al (see below), which indicates from preliminary data that this may be effective, but a long-term follow up is needed.

Most recently results from a placebo-controlled, double-blind clinical trial were published in the journal Stem Cells. The trial was conducted at CHA Bundang Medical Center in South Korea under the leadership of Dr. MinYoung Kim and has provided the first proof that cord blood is effective in the treatment of Cerebral Palsy

Summary

Although stem cell treatment is still very experimental, cord blood appears to offer advantages over other stem cell sources, with autologous sources of stem cells proving to be the best. The published data from the clinical trial in Cerebral Palsy is one of a number of trials that show the wide reaching and positive benefits of cord blood stem cells for treatment of a range of developmental disorders

References

<http://www.nhs.uk/Conditions/Cerebral-palsy/Pages/Causes.aspx>

www.nice.org.uk/nicemedia/live/13803/60879/60879.doc

<http://www.publications.parliament.uk/pa/ld200809/ldhansrd/text/91104-gc0003.htm#091104114000035>

<http://onlinelibrary.wiley.com/doi/10.1002/ana.22518/abstract>

Ann Neurol. 2011 Nov;70(5):698-712 Stem cell therapy for neonatal brain injury: Perspectives and Challenges. Titomanlio L, Kavelaars A, Dalous J, Mani S, El Ghouzzi V, Heijnen C, Baud O, Gressens P.

<http://onlinelibrary.wiley.com/doi/10.1002/stem.1304/full>