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Umbilical cords to repair brain damage



Scientists believe stem cells will be able to repair the brain

By Jonathan Amos in San Francisco

Scientists say stem cells found in the blood of umbilical cords could be used to repair the brain damage suffered by stroke victims.

The treatment has been tested on rats with encouraging results and could be in human trials within a couple of years.

Obtaining stem cells from umbilical cords is far less controversial than sourcing them from embryos, as many scientists would like to do.

If the new research, announced at the annual meeting of the American Association for the Advancement of Science (AAAS), lives up to its potential, "banking" of cords at birth could become a common practice.

Currently, virtually all cords are discarded. Scientists at the AAAS meeting said they could envisage the day when illnesses suffered in adult life could be treated using cells frozen when we were just a few hours old.

Better movement

Professor Paul Sanberg, of the University of South Florida, took stem cells - progenitor cells that can become other types of cell - from the blood of umbilical cords. He directed them in the lab with chemical agents to become immature neuronal cells and then injected them into the veins of rats that had suffered strokes.

The cells migrated to the sites of brain injury and dramatically improved the recovery of the animals. Professor Sanberg told the AAAS: "The animals moved better. Using motor and

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neurological tests, the rats demonstrated recovery in 7-14 days with a 50% improvement over the control animals."

Not only did the injected cells replace those damaged by the stroke, they also appeared to boost the rodents' own brain-repair processes, the scientist said.

Professor Sanberg highlighted the use of intravenous injection rather than the far more difficult neurological procedure of injecting straight into the site of injury in the brain.

"We were able to do this in a certain window of time. It was done shortly after stroke - about 24 hours to seven days. The implications for the patient? Well, it could save them having to undergo neurosurgery for a direct injection."

Storage and distribution

Many more scientists are now beginning to investigate the potential of umbilical cords to play a part in novel therapies. Already cells from cord blood are being used in the treatment of leukaemias and rare anaemias.

"There are several advantages in using cord blood," Professor Sanberg said. "One, we're using non-embryonic cells so you don't have the ethical issues involved; second, you have non-invasive collection unlike bone marrow transplants which require surgery on the hip; and you have abundant supply."

Professor Sanberg said cord components were also open to freezing so they could be stored and distributed easily.

He told the AAAS that he expected cord freezing and banking to become a regular practice in the years ahead as science developed many new treatments based on the immature cells found in the blood.

Professor Sanberg has yet to publish his work in a peer-reviewed journal. He hopes to take the rat work into human trials within one-and-a-half to two years.