36

Effect of Human Umbilical Cord Blood on Mice With Parkinson Disease.

Norman Ende, MD, and Ruifeng Chen, MD. New Jersey Medical School, Newark. *Supported by Abraham S. Ende Research Foundation.*

The possibility that human embryonic stem cells might improve the clinical status of patients with Parkinson disease has received considerable attention. In 1995, it was suggested that immature cells (Berashis cells) existing in human cord blood might have an ameliorating effect on such neurologic diseases as Alzheimer disease, amyotrophic lateral sclerosis, and Parkinson disease. Since these predictions, we have been able to successfully extend the length of life of mice with amyotrophic lateral sclerosis, Huntington disease, and Alzheimer disease. Recently we expanded the studies to include mice with Parkinson disease.

We received 32 mice, 6 to 12 weeks old, B6CBACa-AW-J/A-K cnj6, from Jackson Laboratory, Bar Harbor, ME. The mice were divided into 3 groups: (1) 10 untreated control mice, (2) 10 mice treated with 5.6×10^6 congenic bone marrow mononuclear cells intravenously, and (3) 12 mice receiving 100 to 110×10^6 human umbilical cord blood mononuclear cells intravenously.

At 78 days, 6 of 10 control mice were dead; only 3 to 10 of the bone marrow–treated mice were dead, and only 2 of 12 mice treated with human umbilical cord blood were dead. At 180 days, 8 of 10 untreated control mice were dead, 7 of 10 mice treated with congenic bone marrow were dead, and 6 of 12 mice treated with 100 to 105×10^6 mononuclear cord blood cells were dead. The survival of mice receiving cord blood mononuclear cells compared with untreated control mice was significant ($P < .001$). Mouse congenic bone marrow usually has a survival curve parallel to that of untreated control mice, but in this model it also was significant ($P < .05$).

Without the use of immunosuppression, human umbilical cord blood mononuclear significantly delays the onset of symptoms in mice with Parkinson disease and to a greater extent than congenic mouse marrow cells and without the use of immunosuppression.