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Stem cell therapy for Parkinson's

By Caroline Ryan

BBC News Online health staff in Berlin

Human embryo stem cells have been used to treat rats with symptoms of Parkinson's disease.

A team from Israel's Hadassah University found they developed into the nerve cells which Parkinson's patients lose.

They told the European Fertility Conference in Berlin it was the first time human stem cells had proved an effective treatment in animals.

The findings raise hope of a similar effect in human patients.

Stem cells are the body's "master cells", capable of altering to form different cells with a wide variety of functions throughout the body.

Parkinson's disease affects around 120,000 people in the UK.

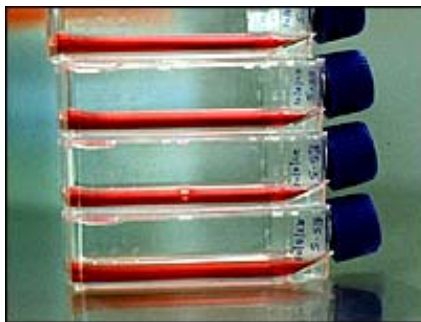
The progressive decline associated with the condition is caused by a loss of brain cells which produce a chemical called dopamine.

Behaviour change

The Israeli team treated human stem cells in the laboratory.

They then transplanted them into the brains of rats which had a Parkinson's-like condition.

The rats' behaviour changed after their treatment.



Stem cells have huge potential for medicine

“ These observations set the stage for future development that may eventually allow the use of embryonic stem cells for the treatment of Parkinson's disease. ”

Dr Benjamin Reubinoff

EUROPEAN FERTILITY CONFERENCE 2004

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Before it took place, they would turn continually, and would be unable to make side steps while they were being dragged across a surface.

But after the transplants, these symptoms were significantly reduced.

When post-mortem examinations were carried out on the rats, it was found that the stem cells had developed into dopamine-producing cells.

The researchers said the cells did not continue to proliferate and to change - a phenomenon which can have dangerous consequences.

In addition, none of the treated rats developed cancerous tumours.

Animal embryonic stem cells have been used to treat animal versions of Parkinson's before, but this research is believed to be the first to involve human cells.

'Setting the stage'

Dr Benjamin Reubinoff, who led the study, said it showed human stem cells could be used to treat an animal model of Parkinson's.

He added: "We believe that these observations are encouraging, and set the stage for future development that may eventually allow the use of embryonic stem cells for the treatment of Parkinson's disease."

However, he said further studies would be needed before the treatment could be given to humans because the safety of the treatment could not yet be assured.

Dr Takumi Takeuchi, of Cornell University in New York, urged caution over the study's findings.

"We are not sure about the long-term effects of this therapy," he said. "And because it is an animal study, the results cannot be directly applied to humans."

Dr Miodrag Stojkovic, of Newcastle University's Institute of Human Genetics, said: "This use of human embryonic stem cells to improve the condition of rats with Parkinson's is excellent news and underlines the huge potential of this kind of treatment.

"However, the development of treatments for humans is much more complicated, because of the difficulties in producing clinical-grade stem cells which are known to be free from contaminants such as viruses, and also the need to conduct lengthy clinical trials to ensure there are no adverse effects, such as the formation of tumours."

Dr Roger Barker, from the Cambridge Centre for Brain Repair, told BBC News Online much more information was needed before the treatment could be given to humans.

"The researchers only monitored the rats for 12 weeks after the transplant. Much longer studies are needed to ensure no tumours develop."

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