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'Korean Scientists Succeeded in Stem Cell Therapy'

By Kim Tae-gyu
Staff Reporter

A team of Korean researchers claimed Thursday they had performed a miracle by enabling a patient, who could not even stand up for the last 19 years, to walk with stem cell therapy.

During a press conference, the scientists said they had last month transplanted multi-potent stem cells from umbilical cord blood to the 37-year-old female patient suffering from a spinal cord injury and she can now walk on her own.

The team was co-headed by Chosun University professor Song Chang-hun, Seoul National University professor Kang Kyung-sun and Han Hoon, Ph.D, from the Seoul Cord Blood Bank (SCB).

``The stem cell transplantation was performed on Oct. 12 this year and in just three weeks she started to walk with the help of a walker," Song said.

The patient's lower limbs were paralyzed after an accident in 1985 damaged her lower back and hips. Afterward she spent her life in bed or in a wheelchair.

For the unprecedented clinical test, the scientists isolated stem cells from umbilical cord blood and then injected them into the damaged part of the spinal cord.

The sensory and motor nerves of the patient started to improve 15 days after the operation and she could move her hips. After 25 days, her feet responded to stimulation.

Earlier in October 2003, Song's team also staged a clinical test with stem cells originating from umbilical cord blood by injecting them into another patient's spine.

``Back then we injected stem cells into spinal fluid and failed to get a good result. This time around, we directly targeted the spine and the method made a difference," Song said.

Song's team looks to further test efficiency of the new therapy with four more patients as soon as they get the green light from Chosun University ethics board and the government.

Song's team plans to report their research to the scientific world within the first half of next year.

Immeasurable Upside Potential

Professor Kang and Han, Song's colleagues who co-led the research, noted the new therapy has a huge upside potential when applied to real treatments, without arousing ethical disputes.

Seoul National University professor Hwang Woo-suk surprised the world last February by announcing his groundbreaking exploit of cloning a human embryo and taking stem cells from it.

The technology is expected to lead to breakthrough treatments for many hard-to-cure diseases, for instance, by creating replacement organs and tissues.

At the same time, however, the feat also fueled an ethical debate that spans science, politics and religion, especially regarding the possibility of reproductive human cloning.

In comparison, Kang said stem cells originating from the blood of umbilical cords would not raise such problems since that blood is routinely discarded after the birth of a baby.

`` There have been many controversial debates on embryonic stem cells and also such stem cells are not practical due to their property of possibly causing teratoma (cancer of cells),'' he explained.

Kang added that since cord blood stem cells are later than embryonic stem cells, they have little chance of causing the fatal teratoma.

`` Embryonic stem cells are omni-potent in that they can divide into any thing even including a tumor cell. But cord blood stem cells are developed enough not to cause such troubles while retaining as powerful a differentiation capacity at the same time,'' he claimed.

Another upside of cord blood stem cells is that they can adapt to the injected bodies without triggering a big negative inner reaction, which are common in other transplantations, according to Han, Ph.D, of the SCB.

`` We don't need a strict match between cord blood stem cell type and the immune system of a patient because the latter accepts the former pretty well thanks to its immaturity,'' Han said.

In other transplantation operations, just a slight mismatch based on the human leukocyte antigen test would cause a catastrophic result due to immune system's resistance.

The SCB currently retains blood from about 45,000 umbilical cords and they are enough to cover all Koreans, amply demonstrating the immeasurable potential of the new therapy.

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