

BEIKE BIOTECHNOLOGY

Patient Case Study

Cerebral Palsy

Male, 2 years old, June - July 2019

Background

Age: 2 years old

Sex: Male

Nationality: Polish

Date of Admission: June 30, 2019

Date of Discharge: July 26, 2019

Treatment Location: Bangkok, Thailand

Diagnosis on Admission: Cerebral palsy

Patient's Medical History and Condition On Admission

The patient was born through a caesarean section at 30 weeks. In the first week of life, he suffered a second-grade brain hemorrhage (hemorrhagic stroke) and had bilateral pneumothorax. This event left the patient with cerebral palsy. During his first year of life, the patient was receiving rehabilitation therapy through the NDT Bobath approach. In addition, the patient had speech therapy and psychology sessions.

At admission, the patient could only speak basic words such as: "mum", "dad", "give", "there", "yum", etc. He was not able to pinch and grab things with his forefinger and thumb, he had problems with precise hand movements. He had increased muscle tone, mainly in his lower extremities and within the shoulders. He could not sit properly, he could not crawl. There was no alternating arm/leg movement. He was wearing glasses and had a strabismus.

Treatment Schedule

The patient received 8 umbilical cord blood-derived stem cell (UCBSC) packets by intravenous (IV) and intrathecal injections, as per the schedule below:

Injection #	Date	Cell Type	Delivery Method	Side Effects
1	July 2, 2019	UCBSC	IV	none reported
2	July 5, 2019	UCBSC	Intrathecal	none reported
3	July 8, 2019	UCBSC	Intrathecal	none reported
4 & 5	July 12, 2019	UCBSC	Intrathecal + IV	none reported
6 & 7	July 16, 2019	UCBSC	Intrathecal + IV	none reported
8	July 19, 2019	UCBSC	Intrathecal	none reported

Condition On Discharge

In terms of trunk control, the patient can reach out to grasp an object in any direction with minimal support. He can keep his body straight while standing if we maintain his legs. When crawling, he can alternatively move his arms to go along the way but sometimes he needs slight guidance to help him move his legs alternatively in order to move further. His hips have not stabilized well yet. He can push on his hands to go from a side-lying position to side sitting with minimal assistance. Regarding his gait, he needs to hold someone's hands in front of him while a

therapist is guiding both legs' motion. He can step forward but still lacks some components of stepping. He has less weight shifting to each side. In occupational therapy, the patient's attention span, hand function, sitting balance and speech have improved. He can use his right hand better than the left one. He can grasp things with palmar grasp and can use both hands together to perform action right in front of him. He can transfer objects from one hand to the other, and can place pegs in a pegboard with minimal support. He is able to pick up small things with pincer grasp and drop them into a narrow necked bottle with minimal support. Regarding oral-motor activities, the patient has more power than initially when blowing bubbles for instance. He now tries to imitate more words (numbers, letters, shapes, animals and more) even though some words are not clear or their sound is not correct.

Follow Up Information

Condition 1 month after treatment: At one month after the treatment, the patient's parents were mentioning: *"He has a better body balance. Sometimes, with the right motivation, he is able to sit alone for a moment. He has greater awareness and willingness to use devices on the playground and in the amusement park, e.g. on a carousel, queue."*

Condition 3 month after treatment: At three months after the treatment, the patient's mother was mentioning: *"My son has a better balance when sitting. Picking things with 2 fingers (left hand) has improved. When he wants to pick something up, he already uses two fingers."*

Condition 12 months after treatment: At the 12 month follow up point the patient's mother reports: *"My son sits comfortably, seated cross-legged. He began to crawl independently. He can climb four steps. He is trying to get up. Using orthoses, he can stand still by the furniture. pinching with 2 fingers is good. My son can catch with two fingers and put things even small, in the same place. Speech develops all the time, he speaks sentences. He understands almost everything that is said to him, answers questions and has a much better memory."*

Please see an excerpt from the patient's 12 month assessment below (submitted by his parents):

Symptom	Assessment of Improvement
Appetite	Significant improvement
Balance	Significant improvement
Bladder control	Moderate improvement
Crawling	Significant improvement
Drooling	No improvement
Head control	Significant improvement
Involuntary movements	Significant improvement
Learning disability	Significant improvement
Limb muscle strength	Significant improvement
Mood disorder	No improvement
Range of movement	Significant improvement
Spasticity	Significant improvement
Speech (babbling for infants)	No improvement
Standing up	Moderate improvement
Swallowing	Significant improvement
Trunk muscle strength	Significant improvement
Walking	Moderate improvement

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