BEIKE BIOTECHNOLOGY

Patient Case Study

Cerebral Palsy

Female, 3 years, November - November 2019

Summary

Diagnosis	Sex	Age	Nationality
Cerebral Palsy	Female	3 years	Polish
Injections	**Cell type**	**Admission date**	**Discharge date**
8	UCMSC	November 6th 2019	November 28th 2019

Medical history

The patient suffered from respiratory and blood circulation failure at birth leading to ischemic stroke and severe cerebral asphyxia along with cerebral oedema. Brain activity was impaired and the diagnosis of cerebral palsy was engaged.

Condition On Admission

Upon admission, the patient’s general development was delayed and she was unable to roll over, crawl, sit, stand or walk. She could only hold her head for a few seconds while sitting, she could not track things with her eyes due to her nystagmus. She had moderate to severe spasticity in her four limbs and her hand function was poor. She had epileptic seizures up to four times per day and her speech was non-verbal.

Treatment Schedule

The patient received 8 umbilical cord derived mesenchymal stem cell (UCMSC) packets by intravenous (IV) and intrathecal administration, as per the schedule below. In addition to the above mentioned stem cell administrations, the patient also received a daily therapy program including multiple sessions of physiotherapy, occupational therapy, hyperbaric oxygen therapy, transcranial magnetic stimulation and hyperbaric oxygen therapy.

Number	Date	Cell Type	Delivery Method	Side Effects
1	2019-11-08	UCMSC	Intravenous Injection	none reported
2	2019-11-11	UCMSC	Intrathecal Injection & Intravenous Injection	none reported
3	2019-11-15	UCMSC	Intrathecal Injection	none reported
4	2019-11-19	UCMSC	Intrathecal Injection	none reported
5	2019-11-22	UCMSC	Intrathecal Injection & Intravenous Injection	none reported
6	2019-11-25	UCMSC	Intrathecal Injection	none reported

Condition at discharge

At discharge, some improvements have already been noticed. The patient could hold her head for more than 30 seconds while sitting and she could move her head to follow a light source. In terms of gross motor function, she still needed maximal support due to her abnormal muscle tone, symmetrical tonic neck reflex, poor limb movement, as well as poor neck and trunk control. However, she sometimes tried to roll over on her own. The spasticity in her hands went from moderate/severe to mild/moderate which helped her to better grasp objects with assistance.

Condition 3 months after treatment

At 3 months after discharge, the patient's family was mentioning that the patient's head control had improved and that she could grab objects better. The patient's mother also mentioned: *"My daughter has seen many positive changes that have even been noticed by physiotherapists and doctors. Head control has improved a lot and we can see a small change for the better in her trunk control. Spasticity has been particularly reduced in her legs. My daughter reacts more to the surrounding world, and a smile appears more often on her face. We also see improvement in appetite and greater ease of feeding. The only thing that worries us is the increase in the number of seizures. However, we hope that this aspect will also improve with time."* Improvements were progressively and continuously being made. The family participated in our follow-up evaluation 3 months after discharge. Please see an excerpt of that evaluation below:

Symptom	Assessment of Improvement
Improvement in general physical condition	Moderate improvement
Appetite	Significant improvement
Balance	Small improvement
Drooling	Small Improvement
Head control	Significant improvement
Involuntary movements	Small Improvement
Mood disorder	Small Improvement
Range of movement	Small Improvement
Spasticity	Moderate improvement
Speech	Small improvement
Swallowing	Moderate improvement
Trunk muscle strength	Moderate improvement
Walking	Moderate improvements

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