BEIKE BIOTECHNOLOGY

Patient Case Study

Cerebral Palsy

Male, 3 years, February 2023

Summary

Diagnosis	Sex	Age	Nationality
Cerebral Palsy	Male	3 years	UK
Injections	**Cell type**	**Admission date**	**Discharge date**
6	UCMSC	January 2023	January 2023

Medical history

The patient, born on February 22, 2020, has a medical history marked by severe hypoxia at birth leading to a primary diagnosis of cerebral palsy. This condition has manifested in symptoms such as hypertonia, dystonia, an unsafe swallow, severely impaired vision with cortical visual impairment (CVI), and a history of seizures. The patient underwent various treatments, including cooling therapy, midazalam, keppra, phenobarbitone, and baclofen for dystonia. Additionally, hyperbaric oxygen therapy (HBOT) was administered, proving beneficial for vision improvement. The patient currently relies on an NG tube for feeding due to reflux issues and takes medications such as phenobarbitone, keppra, omeprazole, and baclofen to manage seizures, reflux, and dystonia. Despite a recent burst ulcer and internal bleeding, the patient's family is considering stem cell treatment for better head control and vision.

Condition On Admission

The patient exhibits limited verbal communication, reacting to touch and smiling when spoken to. Developmentally, the patient experiences global delay, as indicated by infrequent laughter, cooing, and inability to roll independently. Assistance is needed for sitting unsupported. Although there is a history of seizures, the patient has not

experienced an obvious seizure since May. The family reports no notable allergies, but the patient deals with reflux and gas related to the NG tube. The medical team emphasizes the importance of stabilizing the patient's gastrointestinal tract for at least three months before considering stem cell treatment for potential improvements in cognition, development, muscle tone, neck control, and fine motor skills.

Treatment Schedule

Patient received 7 packs of umbilical cord derived stem cell (UCMSC) by intravenous (IV) injection and intrathecal injection via lumbar puncture (LP), as per the schedule below:

Number	Date	Cell Type	Delivery Method	Side Effects
1	2023-03-02	UCMSC	Intrathecal Injection & Intravenous Injection	none reported
2	2023-03-06	UCMSC	Retrobulbar Injection	none reported
3	2023-03-09	UCMSC	Intrathecal Injection	none reported
4	2023-03-13	UCMSC	Intrathecal Injection & Intravenous Injection	none reported

Condition at discharge

The patient has experienced several improvements following stem cell treatment, particularly in the general physical condition. Despite small improvements in appetite, head control, range of movement, spasticity, trunk muscle strength, and walking, there is a notable worsening in the mood disorder after the treatment. The patient is somewhat satisfied with the current treatment outcome, and there have been no other treatments or new diagnoses.

Symptom	Parents' Assessment of Improvement
Appetite	Small improvement
Head Control	Small improvement
Range of Movement	Small improvement
Spasticity	Small improvement
Trunk Muscle Strength	Small improvement

Walking	Small improvement
Mood Disorder	Worse than before treatment

Condition 1 month after treatment

The patient has continued to exhibit overall improvements in their general physical condition since the previous treatment update. Notably, there are moderate improvements in the ability to sit unaided for a few minutes with minimal support, reflecting enhanced core strength and stability. The patient's increased vocalization and responsiveness indicate progress in their communicative abilities, aligning with the desire to communicate more. Regarding specific symptoms, there is a moderate improvement in head control, limb muscle strength, and standing up. Additionally, small improvements are observed in balance, range of movement, spasticity, and speech. While the patient has experienced some improvements, walking ability has not shown any significant change. The parents, along with the doctor, have confirmed these positive changes, expressing satisfaction with the treatment outcome. The decision to increase baclofen dosage from 5ml to 7.5ml suggests a proactive approach to address specific symptoms and further enhance the patient's well-being.

Symptom	Parents' Assessment of Improvement
Appetite	Moderate improvement
Balance	Small improvement
Drooling	Worse than before treatment
Head Control	Moderate improvement
Limb Muscle Strength	Moderate improvement
Range of Movement	Small improvement
Spasticity	Small improvement
Speech	Small improvement
Standing up	Moderate improvement
Swallowing	Small improvement
Trunk Muscle Strength	Moderate improvement

Condition 3 months after treatment

The patient has shown continued progress in their general physical condition, with small improvements observed. Notably, the patient has achieved a significant milestone by

starting to take steps with a walker, marking a remarkable improvement in walking ability. The parents express their satisfaction with the treatment outcome, emphasizing the patient's increased alertness and awareness. Additionally, the patient has become more friendly towards strangers, indicating positive social adaptability developments. In terms of specific symptoms, there are moderate improvements in appetite, head control, limb muscle strength, range of movement, speech, standing up, and trunk muscle strength. Small improvements are noted in balance, crawling, drooling, involuntary movements, and swallowing. Notably, there is a significant improvement in walking, showcasing the effectiveness of the treatment. The parents report that the patient can now communicate their desires, understand expressions and actions, control head movements, and perform activities such as sitting and standing to a considerable extent. However, challenges remain in certain language functions and self-directed actions, reflecting areas for potential further improvement.

Symptom	Parents' Assessment of Improvement
Appetite	Moderate improvement
Balance	Small improvement
Crawling	Small improvement
Drooling	Small improvement
Head Control	Moderate improvement
Involuntary Movements	Small improvement
Limb Muscle Strength	Moderate improvement
Range of Movement	Moderate improvement
Speech	Moderate improvement
Standing up	Moderate improvement
Swallowing	Small improvement
Trunk Muscle Strength	Moderate improvement
Walking	Significant improvement