

BEIKE BIOTECHNOLOGY

Patient Case Study

Cerebral Palsy and Epilepsy

Female, 7 years old, Nov. - Dec. 2010

Background

Age: 7 years old

Sex: Female

Nationality: Brazilian

Date of Admission: November 1, 2010

Date of Discharge: December 8, 2010

Treatment Center: Bethune International Peace Hospital, Shijiazhuang, China

Diagnosis on Admission: Cerebral Palsy and Epilepsy

Condition On Admission

The main presenting problem was that of developmental delay and intermittent seizures since birth. On admission the patient was alert and orientated. Her memory, perceptive functions, and awareness to surroundings were near normal. She could speak and communicate with others but her speech was slow. She was unable to stretch her legs, stand, or walk but could kneel, turn over, and crawl by herself. Muscle tone and strength of her upper limbs were normal but fine motor control in her hands was not good. The muscle tone in her lower limbs was higher than normal and muscle strength was at level 3. Vital signs were in the normal range and stable and other routine checks showed no other abnormalities.

Treatment Schedule

Patient received 8 umbilical cord-derived mesenchymal stem cell (UC-MSC) packets by intravenous (IV) injection and lumbar puncture (LP) as per schedule below:

| Number | Date | Cell Type | Delivery Method | Side Effects |
|--------|-------------------|-----------|-----------------|---------------|
| 1 | November 3, 2010 | UC-MSC | IV | none reported |
| 2 | November 8, 2010 | UC-MSC | LP | none reported |
| 3 | November 12, 2010 | UC-MSC | LP | none reported |
| 4 | November 17, 2010 | UC-MSC | LP | none reported |
| 5 | November 22, 2010 | UC-MSC | IV | none reported |
| 6 | November 26, 2010 | UC-MSC | LP | none reported |
| 7 | November 29, 2010 | UC-MSC | LP | none reported |
| 8 | December 3, 2010 | UC-MSC | LP | none reported |

Condition On Discharge

Patient experienced no adverse events during the treatment and completed all stem cell injections without any side effects. The doctors observed her gaining some improvements in motor function during the treatment period; she could turn herself over more easily, crawl faster, and had much better balance in a kneeling position. They also noted improvements in her speaking. Her voice was clearer and speech was smoother.

Follow Up Information

Condition 3 months after treatment: The parents of the patient reported improvements at the 3 month follow up time point and stated that they are currently satisfied with the outcome of the treatment. In addition to the improvements listed in the table below they also noted, “She shows small improvements in cognition. She is more attentive, focused in school, more attentive to things around her and the everyday. Improved her diction and pronunciation of words. Stopped dribbling. The dyspraxia generally not improved, ie, showed no improvement in fine motor coordination, for example she still can not write or draw... She can stand with support and control trunk very well. Our therapist said she is recovering fast muscle strength of lower limbs.’

Below are the family’s answers to a list of symptoms and the changes seen since the beginning of treatment 3 months ago:

| Symptom | Parents’ Assessment of Improvement |
|------------------------------|------------------------------------|
| Spasticity | Small improvement |
| Trunk muscle strength | No improvement |
| Limb muscle strength | Small improvement |
| Head control | Not applicable |
| Range of movement | Small improvement |
| Involuntary movements | Not applicable |
| Crawling | Not applicable |
| Balance | No improvement |
| Standing up | No improvement |
| Walking | No improvement |
| Speech (babbling in infants) | Not applicable |
| Drooling | Significant improvement |
| Swallowing | Not applicable |
| Appetite | Significant improvement |
| Learning disability | Small improvement |
| Mood disorder | No improvement |