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CORRESPONDENCE

Mesenchymal Stem Cell Therapy in a Preterm Infant with Bronchopulmonary Dysplasia

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To the Editor: The first mesenchymal stem cells (MSC) described in 1999 were derived from human bone marrow, but now they can be obtained from many tissues such as umbilical cord blood, adipose tissue [1]. MSC therapy, one of the new and promising treatment methods, is currently used for many diseases, including bronchopulmonary dysplasia (BPD).

Our case had severe BPD and we administered MSC (1×10^7 cells/kg/dose) through the endotracheal tube and intravenously simultaneously on the 78th postnatal day to extremely preterm infant. He was on mechanical ventilation, first volume targeted conventional, then HFOV. Although the patient was given 4 doses of surfactant and two cycles of steroid therapy (DART protocol), he was not weaned. The patient was able to tolerate the weaning 14 d after MSC therapy. After MSC application, there was no deterioration in blood gases or sepsis markers and no side effects were observed.

The use of MSC in the prevention and treatment of BPD has been shown to be effective in preclinical and clinical studies, and phase 2 studies are now being conducted [2]. It is reported that the main effect is achieved with early use before alveolar damage develops. Therefore, in the treatment of BPD, stem cell therapy was generally applied in the first 14 d in studies [3]. On the other hand, it has been predicted that it can also be used as a rescue therapy in BPD where emphysema and irreversible alveolar damage develop. In a phase 1 study in China, it was planned to evaluate the effect of MSC when used as salvage therapy in babies with BPD aged 1–3 mo [3, 4]. In our case, MSC was used after the development of chronic changes in the chest radiograph on the postnatal 78th d and it is thought to be effective.

Declarations

Conflict of Interest None.

References

1. Mattar P, Bieback K. Comparing the immunomodulatory properties of bone marrow, adipose tissue, and birth-associated tissue mesenchymal stromal cells. Front Immunol. 2015;6:560.
2. Pierro M, Thébaud B, Soll R. Mesenchymal stem cells for the prevention and treatment of bronchopulmonary dysplasia in preterm infants. Cochrane Database Syst Rev. 2017;11:CD011932.
3. Augustine S, Avey MT, Harrison B, et al. Mesenchymal stromal cell therapy in bronchopulmonary dysplasia: Systematic review and meta-analysis of preclinical studies. Stem Cells Transl Med. 2017;6:2079–93.
4. Namba F. Mesenchymal stem cells for the prevention of bronchopulmonary dysplasia. Pediatr Int. 2019;61:945–50.

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