STEM CELL EXPERIMENTS MOVES INTO CLINIC - NEW HOPE FOR CHILDREN WITH BRONCHOPULMONARY DYSPLASIA

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Bronchopulmonary dysplasia (BPD) is a chronic lung disease with long-term complications that affects mainly preterm-born children with low birth weights, especially those who were treated with mechanical ventilation and oxygen therapy. The successful treatment of BPD could reduce the incidence of other diseases of prematurity such as periventricular leukomalacia and retinopathy of prematurity. The results of current therapies are unsatisfactory, therefore searching for novel therapeutic approaches such as mesenchymal stem cell (MSC) administration, should be carried out. Preclinical data strongly supports the role of progenitor cells in the preservation of lung structure. MSC can be found in higher frequency in pre-term umbilical cord than in a term one and its isolation from Wharton-Jelly carry a potential in treating diseases of prematurity. Several question about MSC usage in BPD remains to be answered including cell doses, intervals between infusions, the best route for administration and the timing. MSC can be administered as a treatment or prophylaxis. However, having in mind that not all premature born children are at risk of developing bronchopulmonary dysplasia, a search of laboratory markers should be conducted to identify potential patients. This review summarizes the latest achievements of MSC therapy in the aspect of BPD.

Keywords: mesenchymal stem cell, Wharton’s jelly, umbilical cord, prematurity, lung diseases.