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Umbilical cord blood cell therapy for children with cerebral palsy

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U mbilical cord blood (UCB) cells have been suggested to exert therapeutic effect for cerebral palsy (CP). By conducting double-blind randomized controlled trials, we could observe the safety and efficacy of allogeneic UCB infusion in CP subjects. Physical and mental function evaluations using standardized measures including Gross Motor Performance Measure, Gross Motor Function Measure, and Bayley Scales of Infant Development-II Mental and Motor scales, and muscle strengths of extremities, showed therapeutic efficacy of UCB cells. To assess therapeutic mechanism of UCB in CP, ¹⁸ F-fluorodeoxyglucose positron emission tomography (¹⁸F-FDG-PET/CT) and diffusion tensor images were also used. ¹⁸F-FDG-PET/CT showed activation of basal ganglia and thalami and anti-inflammatory findings in periventricular white matter after UCB administration. Diffusion tensor images suggested improvement in white matter integrity which correlated with motor performance. According to molecular works using blood samples of the CP subjects, we found possible role of innate immune response triggered by UCB infusion. Elevations of pentraxin 3 and interleukin-8 levels in plasma and toll-like receptor 4 expression in blood cells were observed up to 12 days after UCB treatment and those correlated with the motor improvements observed up to 6-month post-injection.

Biography

MinYoung Kim is currently working as Professor and Director of Department of Rehabilitation Medicine and Rehabilitation and Regeneration Research Center, CHA University, Korea. She graduated from Yonsei University College of Medicine, Seoul, Korea in 1991. She obtained her Doctor of Medical Science degree in 2002 and worked as a Post-doc for UCSanDiego in 2007-2008. She has been served as a Senior Editor of American Journal of *Stem Cell*, and Associate Editor of *Restorative Neurology and Neuroscience*. She published more than 34 articles of SCI and PubMed journals during past 7 years. Her fields of research interest are "application of stem cells for brain disease" and "brain rehabilitation".

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