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Application of mesenchymal stromal cells in Duchenne muscular dystrophy

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Duchenne muscular dystrophy is a neuromuscular disorder caused due to mutations in dystrophin gene. It is characterized by progressive muscle degeneration and it was considered as fatal as most of the children die between the ages of 13 to 27 years due to cardio respiratory failure. Currently, there is no effective and curative treatment available but cellular therapies pose as a possible treatment for this debilitating disorder. We would like to discuss the safety and efficacy of the combination protocol of autologous and allogenic stem cells in such cases. It is worthwhile to note that the safety and efficacy of both autologous and cord derived MSC, individually has already been established earlier in DMD patients. This study was medium term retrospective analysis involving 30 patients of which 18 were in the treatment group and 12 were in the control group. Each treatment group patients were given four sessions, one with autologous BM-MNCs and three of allogenic UC-MSCs. Assessments were done based on muscle strength, functional independence score, Brooke score and Vignos score. Among the treatment group 77.7% patients showed a significant improvement in their muscle power, as there was 63% and 50% rise in upper and lower limb's power respectively after the completion of the protocol. When control group (n=12) was compared with treatment group (n=18) it was noticed that the muscle strength of the control group in upper and lower limb declined from the baseline power by 41% and 47% respectively. Functional independence measure score and Brooke-Vignos score had improved in treatment group asserting the efficiency of the treatment. The combination therapy of BM-MNCs and UC-MSCs has shown significant improvement in the muscle strength of the DMD patients without posing any deleterious effects. Therefore, the treatment is effective as well as safe and recommended for the DMD treatment.

Biography

Bhagat Singh Rajput is a Consultant Orthopaedic and Stem Cell Transplant Surgeon practicing for the last 34 years. He has completed his MBBS and Post-graduate Diploma in Orthopaedic Surgery at GSVM Medical College, Kanpur, India. He has completed his training in Orthopaedic Surgery and Stem Cell Transplantation at various national and international medical centers including Royal Liverpool University Hospital, Liverpool, UK. In the last nine years, he has developed and established Stem Cell Transplantation as a new branch of Medical Science in India. He has also the credit of performing more than 2000 stem cell therapy cases until date. He has shown the definitive results of Stem Cell Therapy in various diseases especially in Duchenne muscular dystrophy, arthritis knee, rheumatoid polyarthritis, spinal cord injuries and ILD-interstitial lung disease. He is also the pioneer in introducing activated T-cell immunotherapy and dendritic cell vaccine in India for metastatic and primary cancer where chemotherapy and radiotherapy has failed. He is the Founder, Vice President of Stem Cell Society of India and the organizing Chairman of SCSICON 2016 and 2018, New Delhi. He has several publications on DMD, arthritis knee and rheumatoid polyarthritis. He is reviewer for The American Journal of the Medical Sciences.

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