

Mesenchymal stem cells therapy

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Mesenchymal stem cells (MSCs, or known as mesenchymal stromal cells) are multi-potent adult stem cells that can be extracted from bone marrow, adipose tissue and cord blood. MSCs have the potential to differentiate into a wide spectrum of tissue cells. It was initially proven to improve the clinical phenotype of osteogenesis imperfecta but there is no clinical evidence of long term engraftment. For tissue regeneration, MSCs have been used for bone, cartilage or even skin repair in various degenerative or congenital diseases. The other potential applications of MSCs are immunomodulation for various immune disorders such as GvHD, SLE or multiple sclerosis. It appears that MSCs exert such function by both secreting soluble factors and also via cell-cell interaction in the targeted site. However, the immunosuppressive function is often transient and may not work if the recipients are suffering from aggressive inflammatory condition. It is due to the effects of various cytokines and chemokines may alter the survival and function of the MSCs. In addition, one has to be aware that MSCs can also enhance tumor growth and metastasis so its use in cancer setting has to be carefully looked into. Recently, we have been exploring the use of MSCs as vehicle for gene therapy or source for induced pluripotent stem cells. It appears that they have specific advantages over the conventional methodology.