

Cytherapy Corner, June 2021

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The June 2021 issue of *Cytherapy* features a review article from Zhang et al., that provides an overview of the epidemiology and pathogenesis of osteoarthritis, reviews existing pre-clinical and clinical data examining the potency and mode of action of MSC-based therapies for this condition and summarizes existing roadblocks that need to be resolved to standardize and optimize the use of MSCs for treating OA.

A second review article by Shetty et al., provides an update on the potential use of MSC-based therapies to treat COVID-19 patients with acute respiratory distress syndrome (ARDS). This article reviews existing data on the use of MSCs to reconstitute T cell function in HIV patients and treat liver failure due to HBV infection, and also provides a timely update on the many trials evaluating the potency and mode of action of MSCs in COVID-19 patients.

Other articles in this issue include a study by Li et al., which demonstrates that umbilical cord-derived MSCs (hUC-MSCs) restore glycemic control in a mouse model of type 2 diabetes by preventing beta-cell dedifferentiation, and a paper by Robertson et al., which compares the efficacy of IV vs. IN administration of hUC-MSCs as an adjunct therapy for hypothermia in a piglet model of neonatal encephalopathy.

This work revealed a beneficial effect of HT + IN administration of hUC-MSCs on aEEG recovery, brain energy metabolism and oligodendrocyte survival. Another notable manuscript by Viljoen et al., provides a perspective on establishing a public umbilical cord blood inventory in South Africa. Due to their high degree of ethnic and genetic diversity, African and mixed ancestry populations in South Africa are underrepresented in national and international bone marrow (BM) and peripheral blood (PB) donor registries, making it difficult to find matched donors. Since South Africa does not have a public CB inventory, efforts to establish one are critically important.

The July 2021 issue of *Cytherapy* features a review article by Kundu et al., that discusses methods to generate clinical grade NK cells for adoptive cell transfer including available starting materials, methods and platforms for cell expansion including feeder dependent and feeder free approaches, and also outlines priorities to address to improve capacity and harmonize existing release criteria.

The issue also contains an article by Hsu et al., showing that butyrate pre-treatment of adipose-derived stem cells (ASCs) enhanced their ability to suppress proliferation of activated

splenocytes, which is linked to induction of iNOS, IL10 and PGE2 in cells. The authors further show that oral butyrate administration can correct defects in the immunosuppressive activity of ASCs derived from diabetic mice.

An article by Lee et al., demonstrates that treatment of melanoma bearing humanized mice with a combination of a TGF β 2 antisense oligodeoxynucleotide and IL-2 significantly impedes tumor growth by enhancing the tumor infiltration and killing functions of CTLs and attenuating IL2-mediated Treg formation. The article by Mamo et al., describes a retrospective chart review of NK cell infusions at a single center to assess the overall severity of associated infusion reactions. The study revealed that the majority of patients infused with NK cells experience grade 1 or 2 infusion reactions, while fewer numbers experience grade 3 reactions that are mainly cardiovascular in nature, which necessitates close monitoring during the first 4 hours post-infusion.

Additionally, a study by Giovanna et al., compared the allograft logistic process at a single center before and during the COVID-29 pandemic to assess overall impacts on outcomes. The study found that while the number of transplants did not decrease during pandemic, the later significantly influenced the criteria adopted to select donors and the source of stem cells used for transplants.

I hope you enjoy reading these and other articles in the June and July issues of *Cytotherapy*.