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EDITORIAL

Glucocorticoid, Covid-19, bone and nerve repair

COVID-19 was first identified and breakout in the Chinese city Wuhan in early 2020, and glucocorticoids was one of the therapies for severe Covid-19 cases. What is the incident rate for glucocorticoids-induced osteonecrosis for Covid-19 patients? A systematic review of glucocorticoid associated osteonecrosis and an investigation of glucocorticoid exposure of COVID-19 patients in Wuhan city were conducted. The average of cumulative glucocorticoid (methylprednisolone) exposure was 504 mg for the Covid-19 patients and only 1 confirmed osteonecrosis case was identified out of 1406 patients with glucocorticoid treatment in this cohort of Wuhan patients, implying the importance of early prevention of glucocorticoids-induced osteonecrosis with patient screening and preventive measurements [1].

For challenging formal head osteonecrosis management, there are many new attempts published in recent 2 years in this Journal [2–7]. In this issue Li et al. reported a novel scaffold carrying vascular bundle for the treatment of necrotic femoral head following decompression, they have also anastomosed the transplanted vascular bundles with the existing blood vessels around the hip, which significantly improved the treatment successful rate [8].

Continues understanding the mechanisms of bone repair will lead to novel and more efficient therapy. Journal of Orthopaedic Translation has published many innovative discoveries focusing on new technologies in the past 2 years [9–15]. In this issue, Wang et al. reported that transient activation of notch signaling by Jagged-1 peptide significantly enhanced mesenchymal stem cell proliferation in the bone marrow and promoted bone defect repair [16]. Of course, bone regeneration is closely associated with vascularization, therapeutic agents that stimulate angiogenesis will greatly benefit bone repair. When plant-derived Cucurbitacin B was incorporated into PLGA andβ-TCP scaffolds, they significantly enhanced neovascularization and bone formation in rat critical calvarial defect model [17].

Neve injury repair still remains as one of the most challenging orthopaedic issues. Clearance of myelin debris and remyelination are necessary steps for peripheral nerve regeneration, yet these processes are not well understood. Shi et al. screened the difference in genes of normal and activated Schwann cells harvested before and following peripheral nerve injury, and found that core genes in endocytosis pathway were highly activated following nerve injury, suggesting enhancing endocytosis may be a new therapeutic strategy for nerve tissue engineering [18].

Spinal cord injury (SCI) is a disastrous situation that affects many patients worldwide, yet the treatment options remain to be limited. Following the publication of clinical neurorestorative therapeutic guidelines for spinal cord injury (IANR/CANR version 2019) in our journal in 2020 [19], we have published many original and cutting edge research work in SCI pathogenesis and treatment [20–22]. Among the many new targets, exosomes emerge to be a potential treatment option for SCI. Exosomes are complex lipid membrane structures secreted by cells, can transport their cargoes (proteins, microRNAs) to the targeted cells and exert their communication and regulation functions. Pan et al. have reviewed and discussed the use of various stem cells derived exosomes for the treatment of SCI [23].

Despite the long-lasting Covid-10 pandemic struggle, academics around the world are working tirelessly to provide education and service [24], discover new biological mechanisms in musculoskeletal tissue regeneration. New inventions continue to emerge to help building better bones and nerves. With combined endeavors, we shall overcome Covid-19 soon and be even stronger in body and mind!

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