EDITORIAL

Osteoporosis and osteoarthritis: A translational perspective

Two of the most common orthopaedic disorders are osteoporosis and osteoarthritis. Not only do they affect a large proportion of the population, their associated annual healthcare costs are large, even before taking indirect economic costs into consideration. It is not surprising, then, that they are also two of the most widely studied orthopaedic disorders, for which the clinical and basic research fields continue to find new associated risk factors and pathophysiologies. Current treatment options are often improved and yet sometimes questioned. If these disorders can be better understood, prevented, and treated, we can reduce the direct and indirect costs associated with them. In this issue, articles from various sides of the translational fields have sought to better understand these diseases and what can be carried out to reduce their burden to society.

Osteoporosis is usually managed with a class of popular drugs—bisphosphonates—that reduce bone resorption. Based on this unique mechanism, Chen et al. [1] utilised a commonly used bisphosphonate, zoledronate, to coat a magnesium-based implant to sustain drug release and promote fracture healing. Zhu et al. [2] conducted a meta-analysis to assess the efficacy of denosumab in postmenopausal women who had previously used bisphosphonates. This review combines the results from four randomised controlled trials and may provide further evidence and guidance for osteoporosis treatment, particularly in a vulnerable population.

In this issue, a systematic review on the prevalence of osteoarthritis following anterior cruciate ligament injury is presented by Huang et al. [3], providing qualitative analysis of 38 studies. This review identifies risk factors that may advise clinicians in treatment of both anterior cruciate ligaments injuries and osteoarthritis. Zhao et al. [4] also provided a review on osteoarthritis (meta-analysis review), which focused on the use of platelet-rich plasma as a treatment. Total hip arthroplasty may be the only treatment option for severe osteoarthritis or osteoporosis. Implant systems are continuing to improve long-term quality of life. Kock et al. [5] describe a novel adaptor system in their long-term study. Although osteoarthritis is a deterioration of cartilage, bone development may affect the disease, such as in the case of developmental dysplasia of the hip. Chu et al. [6] demonstrate that the subchondral trabecular bone may influence the development of hip osteoarthritis. In addition to helping researchers study diseases, reliable animal models may also be used to test novel treatment option. A rat model developed by Xu et al.

[7] demonstrates that muscle atrophy may trigger cartilage degeneration that could lead to osteoarthritis. Although this research is still in the *in vivo* testing stages, clinicians may be advised to consider the risks of developing OA in patients who experience muscle atrophy.

These studies demonstrate work undertaken by researchers and clinicians alike to help understand and treat two of the greatest and most costly orthopaedic disorders currently facing society. If those in the translational field can continue to work together, we may be able to reduce these costs and burdens and, most importantly, help patients who suffer from these disorders.

References

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