

INTERNATIONAL CONFERENCE ON CELL SCIENCE AND REGENERATIVE MEDICINE



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Stem Cells for the Management of Osteoarthritis: Hype or Hope?

Abstract: Osteoarthritis is the most common form of arthritis. As a common cause of disability, knee osteoarthritis affects an estimated 365 million individuals worldwide and is expected to increase by 75% over the next 30 years. Unfortunately, there are no approved drugs to slow or stop the progression of this disease (i.e., disease-modifying osteoarthritis drugs, DMOADs). As a result, there has been a growing demand for more effective nonoperative treatment options for knee osteoarthritis, and stem cell therapy offers the potential to modify the natural course of this disease. The purpose of this presentation is to review the current evidence that stem cells provide symptom relief and structural benefit in knee osteoarthritis. As meta-analyses are considered the highest level of evidence (Level 4), a Medline search was performed to identify meta-analyses and network meta-analyses of intra-articular stem cells for knee osteoarthritis. Given that over 20 meta-analyses and network meta-analyses have been published on this topic since 2022, a select subset of these articles will be discussed in more detail with regard to their methodological quality and risk of bias. Two articles that reviewed the methodological quality and risk of bias in systemic reviews and meta-analyses published prior to 2021 will also be discussed. Previously published studies exhibit a large degree of heterogeneity in terms of study design, comparability of different sources of stem cells, varying dosages administered, efficacy of delivery methods, variability in the comparator groups, and measured outcomes. As such, the results of meta-analyses of stem cell therapy to treat knee osteoarthritis should be interpreted with caution, and one should be prudent drawing conclusions from these articles.

Keywords: knee osteoarthritis, meta-analyses, cartilage regeneration, pain, function

Biography: Dr. C. Kent Kwoh's research involves the assessment of efficacy of treatments for osteoarthritis, including the use of intra-articular therapies such as stem cell therapy and platelet rich plasma (PRP). He has served on committees for the development of guidelines for the management of hand, hip and knee osteoarthritis for the American College of Rheumatology, the Osteoarthritis Research Society International and the American Academy of Orthopaedic Surgeons. He has received continuous funding from the National Institutes of Health (NIH) since 1989 and is author or co-author of more than 300 peer-reviewed journal articles.