



Cellular Therapy in Orthopedics: A New Era

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Medicine has seen a dizzying increase in the use of cellular therapies for the treatment of multiple pathologies, including musculoskeletal diseases. In this scenario, traumatic cartilage injuries gain a greater focus. This technique can represent a significant breakthrough in the treatment of injuries that were previously difficult to be treated completely and successfully. Cellular therapy is an important therapeutic promise that could benefit a wide variety of patients, including those who practice physical activity and have suffered traumatic cartilage injuries.

Cellular therapy is based on optimizing the individual's regenerative capacity to carry out tissue repair similar to the original tissue, promoting tissue regeneration, rather than repair through the scar process. It is based on the triad: cells, scaffold and cellular growth factors. Cells can be autologous or heterologous, depending on the case, the pathology to be treated and the patient's characteristics. The main objective is to stimulate the natural process of tissue regeneration, reducing the inflammatory and damaging process, pain, and functional disability of the patient.

The literature shows that cellular therapy has promising results in the treatment of traumatic cartilage injuries. Recent studies have shown that the use of mesenchymal stem cells (MSCs) can improve the regeneration of cartilage tissue in patients with traumatic injuries. Other types of cells have also been used, such as induced pluripotent stem cells (iPSCs) and hematopoietic stem cells (HSCs).

Lee., et al. in 2020 investigated the use of mesenchymal stem cells for the treatment of cartilage injuries in animals and humans. The study showed promising results in cartilage regeneration, with improved joint function and pain relief, without serious side effects reported.

Jones., et al. (2019) analyzed 94 studies and concluded that the use of stem cells for the treatment of traumatic cartilage in-

juries was associated with significant improvements in pain, joint function, and quality of life in patients. Cao et al. in 2017 evaluated the use of mesenchymal stem cells in knee cartilage injuries, demonstrating that cellular therapy can significantly improve pain and joint function, as well as improve cartilage regeneration, with low risk of adverse events. Krych., et al. (2019) also demonstrated promising results in the use of stem cells for the treatment of traumatic cartilage injuries in professional athletes.

This technology has been used in professional athletes with positive results. A recent example was the case of Brazilian football player Neymar, who suffered a new fracture of the base of the fifth metatarsal in his foot in 2019. Treatment with the technique enabled his rapid recovery and return to the fields in record time.

Despite the promising evidences, there is still much to be done to improve cellular therapy techniques and expand its use in the treatment of musculoskeletal injuries. It is necessary to ensure the safety of patients who receive this type of treatment. Currently, there are potential risks associated with the experimental use of this technique, such as the risk of developing tumors, the development of severe inflammatory reactions and the risk of treatment rejection by the patient's immune system cells.

Therefore, it is essential that rigorous studies be conducted to evaluate the efficacy and safety of cellular therapy in patients before its widespread use. The rigorous quality control and careful monitoring of these patients would enable the reduction of associated risks. With continuous advancement in technology and research, cellular therapy could revolutionize the treatment of musculoskeletal injuries and bring new hope to patients suffering from these conditions.

Cell therapy is an emerging field with great potential to revolutionize the treatment of musculoskeletal diseases, especially

traumatic cartilage injuries. However, before widespread adoption, rigorous studies must be conducted to evaluate the safety and efficacy of this therapy in patients. Stringent quality control and careful monitoring of patients undergoing cell therapy could reduce associated risks. Advancements in scientific research in this area have brought about new perspectives and opportunities to improve the quality of life of patients suffering from these conditions. As such, cell therapy represents a promising approach to the treatment of various diseases, particularly traumatic cartilage injuries. I believe this technology has the potential to transform the field of musculoskeletal disease treatment. However, continued investment in research is necessary to explore its full potential and ensure its long-term safety and efficacy."