

3rd International Conference on Tissue Science & Regenerative Medicine

September 24-26, 2014 Valencia Convention Centre, Spain

The new challenge, considering adult mesenchymal stem cells (MSC) for articular cartilage repair

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Articular cartilage plays pivotal roles in securing smooth joint kinetics and act as a shock absorber, however, is a highly organized tissue lacking self-regeneration capacity upon lesion. Chondral injury could lead to the development of osteoarthritis (OA). Post-lesions defects are a major clinical problem, and there is at present no satisfactory clinical technique to regenerate cartilage. The initial treatment of meniscus tear of the knee is managed conservatively with no steroidal antiinflammatory drugs and physical therapy. When such conservative treatment fails, an arthroscopic resection of the meniscus is necessary, with this procedure, cartilage defects are repaired with fibrocartilage, which is known to be biochemically and biomechanically different from normal hyaline cartilage and degeneration occurs in the reparative tissue. However, the major drawback of the meniscectomy is an early onset of osteoarthritis. Mesenchymal stem cells (MSCs) are defined as pluripotent cells found in numerous human tissues, including bone marrow and adipose tissue, MSCs are known to have a potential for articular cartilage regeneration. Therefore, an effective and noninvasive treatment for patients with continuous knee pain due to damaged meniscus has been sought. Here, we present a review, highlighting the possible regenerative mechanisms of damaged meniscus with MSCs (especially adipose tissue-derived stem cells (ASCs)), along with a case of successful repair of torn meniscus with significant reduction of knee pain by percutaneous injection of autologous ASCs into an adult human knee. MSCs represent a promising new therapy in regenerative medicine.

Biography

Miguel Garber has over 27 years experience in Internal medicine and cardiology, with expertise in regenerative medicine, training and education, research, product development and senior management. He has more than 10 years working with Stem Cell, including building and managing the stem cell evaluation, explore and developing stem cell therapies for cardiomyopathies, osteoarthritis and regenerative medicine at Stem cell Therapeutics Department of American Medical Information Group and Clinica Quirurgica Quantum. He is currently serving as Medical Director of Clinica Quantum and Clinical Director of regenerative Medicine department at Clinica Quantum, ongoing of several investigative research involved Stem Cells application (ASC) and Drug stimulating stem cells (Aphanizomenón Flos Aquae). Dr. Garber has made a significant contribution to Stem cell Research. Actually he is involved in Adipose Stem Cell application.

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