AB0093

EFFECTIVENESS AND SAFETY OF PRILOCAINE IN COMBINATION WITH HYALURONIC ACID IN KNEE OSTEOARTHRITIS: AN OPEN-LABEL STUDY

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Background: Knee osteoarthritis (OA) is a degenerative progressive, debilitating and painful joint disease. Apart from surgery, treatment of OA includes pharmacotherapy and non-medical treatment such as physical therapy, exercise and local applications. Local hyaluronic acid, steroids and local anesthetics provide symptomatic relief and delay surgery.

Objectives: The present study aimed to assess the effectiveness and safety local prilocaine + hyaluronic acid combination in patients with painful knee osteoarthritis radiologically classified as having grade 2 and 3 OA.

Methods: A total of 64 patients with knee OA diagnosed as per the American College of Rheumatology (ACR) criteria were enrolled in the study. Of these patients, 42 had grade 2 and others had grade 3 disease. A single injection of the combination product was administered to all patients. The combination product contained 1 mg hyaluronic acid, 14 mg cross-linked hyaluronic acid, 6.9 mg sodium chloride and 3 mg prilocaine hydrochloride in a 2 ml solution. The combination was injected into a single joint in the painful knee through the anteromedial aspect of the joint. Assessments were performed before the treatment and at 4 and 12 weeks post-treatment by the same physician. The study was designed as an open-label, observational study. The patients were assessed using the Lysholm Knee Scoring Scale. Patient scores were categorized as poor (0-64), fair (65-83), good (84-90) or excellent (91-100). Pain and functional measures were evaluated by this scale.

Results: There was a female (n=58) predominance in the study sample. The mean age of the patients was 56.4 ± 15.3 years. As rated by the Lysholm Knee Scoring Scale, the number of patients with poor scores was 50 before treatment which decreased to 40 at 4 weeks and 30 at 12 weeks post-treatment. There were 4 patients which scored good before treatment and the number of patients with good scores rose to 6 at 4 weeks and 16 at 12 weeks. These findings were statistically significant (p<0.05). None of the patients received any additional medication and all continued their daily activities. A home exercise program was followed by the patients throughout the study. Global evaluation of the study physician rated 40 patients in good or excellent condition, whereas 34 patients self-rated themselves in good or excellent condition. Six patients had local symptoms including swelling, pain and redness which were of mild-to-moderate intensity. These symptoms resolved in 1-3 days with simple interventions.

Conclusion: Local hyaluronic acid injections may represent an alternative to systemic medications in the treatment of knee osteoarthritis and they can provide long-term relief with minimal adverse effects when combined with local anesthetics without the need for additional drugs or treatments.

Disclosure of Interests: None declared

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AB0094

DIFFERENTIATION OF ADIPOSE DERIVED MESENCHYMAL STEM CELLS OBTAINED FROM PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS ANKYLOSING SPONDYLITIS AND SYSTEMIC SCLEROSIS

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Background: Cartilage and bone destruction occurs in many rheumatic diseases. While the use of biologic drugs may delay the destruction but still it cannot be averted. Adipose tissue is an easy accessible and rich source of MSCs. Application of mesenchymal stem/stromal cells (MSCs) may be promising option for successful tissue regeneration in therapy of ankylosing spondylitis (AS) systemic lupus erythematosus (SLE) and systemic sclerosis (SSc) patients.

Objectives: The aim of this study was to compare differentiation potential of ASCs obtained from AS, SLE, SSc patients and ASCs line originating from healthy volunteers (hASCs). The phenotype of these cells has been also analysed.

Methods: ASCs obtained from AS (n=9), SLE (n=10), SSc (n=10) patients and 5 commercially available hASC lines were used in study. Cells in passage 4 were used in each experiment. Phenotype of ASCs was evaluated by flow cytometry. Differentiation was made by using osteogenic, chondrogenic or adipogenic media. At the end of differentiation process cells were harvested and total RNA was isolated. Relative quantification (RQ) of gene expression level were calculated by the 2^{-ΔΔCt} method.

After 4 weeks of chondrogenic differentiation, mRNA level of *SOX9* and aggrecan (*ACAN*) mRNA has been evaluated by RT-PCR. Additionally glycosaminoglycan (GAG) deposition was analysed by alcian blue staining. After 2 weeks of osteogenic differentiation, expression of *RUNX-2*, collagen 1a1 (*COL1a1*) and osteopontin (*OPN*) mRNA has been determined. Calcium deposition has been determined by alizarin red staining. After 3 weeks of adipogenic differentiation expression of CCAAT/enhancer-binding protein (*C/EBP*), peroxisome proliferator activated receptor-γ (*PPAR-γ*) and fatty acid binding protein 4 (*FABP4*) was determined.

Results: All ASCs cultured in osteogenic medium showed calcium deposition. The expression of *RUNX-2* and *OPN* mRNA was significantly higher in AS-ASCs. Cells obtained from SLE and SSc revealed significantly lower expression of *COL1a1* than hASCs lines.

The results of alcian blue staining showed chondrogenesis of cells obtained from all patients types. No statistically significant differences between AS, SLE, SSc and hASCa lines were observed in *SOX9* mRNA expression. However, all patients derived cells expressed a lower of *ACAN* mRNA level.

Deposition of oil droplets in cytoplasm was observed in all cells cultured in adipogenic medium. There were no differences in expression of *C/EBP* and *FAB4*. Cell derived from SLE and AS expressed significantly higher level of *PPARγ*.

Conclusion: AS, SLE and SSc ASCs have phenotype comparable with hASCs lines. The patients derived ASCs are mighty to differentiate into any of the 3 cell types, although the process is altered.

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AB0095

A REGULATORY ROLE OF ANTXR1 IN RANKL-INDUCED OSTEOCLAST DIFFERENTIATION AND FUNCTION

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Background: Anthrax toxin receptor 1 (ANTXR1) has been known to have relationship with extracellular transmembrane protein deeply associated with the process of bone formation and exert important role in angiogenesis. However, there have been no reports to prove the effects of ANTXR1 on bone metabolism mediated by two types of bone cells, osteoclasts and osteoblasts. The aim of this study is to reveal the role of ANTXR1 in the differentiation and function of osteoclasts and osteoblasts.

Objectives: The aim of this study is to reveal the role of ANTXR1 in the differentiation and function of osteoclasts and osteoblasts.

Methods: To determine the effect of ANTXR1 on osteoclastogenesis or osteoblast differentiation, we examined TRAP staining, F-actin staining and Pit assay, or ALP and Alizarin Red-mineralization staining, respectively. The mechanism of ANTXR1 by transfection of retrovirus or siRNA analyzed using real-time PCR and western blot analysis. Also, the effect of ANTXR1 on osteoclast-mediated angiogenesis of endothelial cells assessed by in vitro vascular tubule formation assay of human umbilical vein endothelial cells (HUVECs).

Results: Through performing gain- and loss-of-function studies, we found that ANTXR1 positively regulated receptor activator of nuclear factor kappa B ligand (RANKL)-induced osteoclast differentiation and bone resorption with no effects on osteoblast differentiation. During ANTXR1-mediated regulation of osteoclastogenesis, phosphorylation of early signal transducers, c-jun N-terminal kinase (JNK), Akt, and inhibitor of kappa B (IκB) was affected, which in turn alteration of mRNA and protein levels of c-Fos and nuclear factor of activated T cells cytoplasmic 1 (NFATc1). In addition, genetic manipulation of ANTXR1 in bone marrow macrophages (BMMs) modulated the capillary-like tube formation by HUVECs via two kinds of angiogenic factors, matrix metalloproteinase-9 (MMP-9) and vascular endothelial growth factor-A (VEGF-A). These results explained the important role of ANTXR1 in osteoclast differentiation and functional activity, as well as, osteoclast-mediated angiogenesis of endothelial cells.

Conclusion: Taken together, it was proposed that ANTXR1 might be a promising candidate for gene therapy related with bone metabolic diseases and further, have potential to be served as an important biomarker in the research fields of bone metastasis associated with vascularization.

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