Pharmacovigilance-2013
OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Conference and Exhibition on
Pharmacovigilance & Clinical Trials
November 18-19, 2013 Hilton San Antonio Airport, USA

Immunosuppressive effects of mesenchymal stem cells versus corticosteroid in experimental model of arthritis

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Abstract

Objective: The objective of this study was to compare between the efficacies of mesenchymal stem cell (MSC) and betamethasone in the treatment of rheumatoid arthritis.

Material and Method: 90 male albino mice were divided equally into 2 models as follows: MSC model, group 1: saline control group, group 2: Acetic acid, group 3: CIA, group 4: induced arthritis mice that received intravenous injection of MSCs. Betamethasone model, group 1: phosphate buffer saline, group 2: Acetic acid, group 3: betamethasone control, group 4: CIA, group 5: induced arthritis mice that received intraperitoneal injection of betamethasone. Mice arthritis models were assessed by clinical paw edema and x-rays, at the proper time of sacrefaction, tissues were collected and examined using real-time PCR (RT-PCR), synovial tissue was examined for (IL-10) interleukin-10 (TNF-α), tumor necrosis factor-α, (COMP)-Cartilage oligomeric matrix protein, (MMP-3) Matrix metalloproteinase3, while (MDA), (LDH), (GSH), (CAT) and (MPO) were determined using colorimetric kits. In addition detection of serum level of (IgG), (RF), (CRP), (ANA) by enzyme-linked immunosorbent assay (ELISA). Also detection of blood (ESR) was conducted.

Results: Histopathological, paw edema and PCR results showed improvement of the group that received MSC compared to the diseased group and group received betamethasone.

Conclusion: MSC significantly enhance the efficacy of collagen-induced arthritis treatment, which is superior to betamethasone treatment likely through the modulation of the expression of various cytokines.