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Effect of mesenchymal stem cells alone or combined with berberine versus methotrexate in an experimental model of rheumatoid arthritis

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Rheumatoid arthritis (RA) is an autoimmune disease characterized by chronic inflammatory synovitis and production of auto antibodies and several proinflammatory cytokines, which lead to joint destruction. Mesenchymal stem cells (MSCs), exert profound immunomodulation which encourages a possible use of these cells in the treatment of autoimmune diseases. Berberine is an isoquinoline alkaloid with anti-inflammatory activities. This work aimed to evaluate the efficacy of stem cells alone or combined with berberine versus methotrexate in rheumatoid arthritis treatment. Forty-two rats were used, divided into six groups, with 7 rats each. GI: control group. GII: RA group. GIII: RA was given mesenchymal stem cell derived from bone marrow by single intravenous injection. GIV: RA treated with berberine orally. GV: RA treated with mesenchymal stem cells combined with berberine. GVI: RA treated with methotrexate intraperitoneal injection. Rheumatoid arthritis will be induced in rats by intravenous injection of Complete Freund's adjuvant (CFA) at day 0 and 21 as immunization boost dose. All the treatment was given after 21 days of induction of RA for one month. At the end of the experiment blood samples were collected from all groups then animals sacrificed. Whole knee joints were excised and the specimens were processed for histological, immunohistochemical examination. Treatment with stem cells significantly reduced clinical symptoms and joint pathology. Interestingly, stem cells decreased periarticular and systemic bone loss in RA by maintaining trabecular bone structure more than the other groups.

Biography

Nashwa AM Mostafa has completed her PhD at the age of 35 years from Faculty of Medicine, Assiut University, Egypt and she had a postdoctoral fellowship from Bern University, Switzerland. She has published 15 papers in reputed journals and has been serving as an Editorial Board Member of repute. She is paying a major concern to basic researches that may lead to possible/definite improvement in health services and decreasing disabilities, morbidity, and mortality. Also, interested in stem cells and regenerative medicine.

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