Histological, Fluorescence and Ultrastructural Assessment of Presumptive Effect of Carbimazole Treatment and its Co-administration with Bone Marrow-Derived Mesenchymal Stem Cells on Parotid Glands of Albino Rats

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Abstract

Background: Carbimazole is a popular drug for hyperthyroidism. However, it has many side effects on different tissues. Bone marrow-derived mes enchymal stem cells (BM-MSCs) are efficient in tissue regeneration.
Aim: To appraise the consequence of carbimazole (antithyroid drug) intake on albino rat parotid gland structure and plausible outcome of bone marrow-derived mes enchymal stem cells (BM-MSCs) application at different durations.
Material and methods: Forty adult male albino rats were used and categorized into: Group I: obtained distilled water. Group II: acquired therapeutic dose of carbimazole. Group III: received carbimazole and single dose of BM-MSCs at the start of experiment. Group IV: got carbimazole then by finishing of 3rd week they received solitary injection of BM-MSCs. Preparation of specimens for examination by light, fluorescent and transmission electron microscope was performed. Histomorphometric data of acini area% was statistically analyzed using ANOVA test.
Results: Both histological and ultrastructural examinations illustrated that parotid gland has normal structure in Group I and approximately normal features in Group III. Group II demonstrated distorted acini and duct system. Group IV presented normal features in some acini and some areas of duct system but degenerative features in others. Results of fluorescence labeling explored some labeled-BM-MSCs in Group III but apparently copious labeled cells in Group IV. Statistical results showed highest mean acini area% in Group I, subsequently Group III, then Group IV, followed by Group II.
Conclusions: Carbimazole has deteriorative outcomes on the parotid gland of albino rats. BM-MSCs ameliorate the damaging upshot of carbimazole in a direct proportion manner with time factor.

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