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Therapeutic role of bone marrow-derived mesenchymal stem cells in cyclophosphamide-induced cardiotoxicity in adult male albino rat: Morphological and immunohistochemical study

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The aim of the present study was to evaluate the therapeutic role of BM-MSCs in CP-induced cardiotoxicity. Adult male albino rats weighing 200-230g were allocated into four groups: Group I received no manipulation; group II received a single dose of CP (200 mg/kg bw), i.p. on day 1 and sacrificed on day 10; group III had the same treatment as group II but sacrificed on day 40; group IV received the same treatment as group II followed by a single MSC injection (1x10⁶) on day 10 and sacrificed on day 40. CPK serum level increased 10 days after CP administration then decreased to almost normal following MSCs treatment but not in the recovery group. Histological changes following CP administration such as distortion of the myocardial architecture, widening of the spaces, ballooning, rarefaction and vacuolation of the sarcoplasm, nuclear changes, inflammatory exudate and cellular infiltration as well as congested blood capillaries were encountered. Collagen fibers significantly increased following CP and remained high in the recovery group, but markedly decreased following MSCs treatment. Apoptotic bodies confirmed by immunohistochemical reaction of *bax* (pro-apoptotic) and cardiac tissue level of *bax* gene showed marked increase in CP-treated and recovery groups, but a decrease in MSCs-treated. On the other hand, *bcl-2* reaction (anti-apoptotic) and *GPx* gene were markedly decreased in CP-treated and recovery groups but increase in MSCs-treated group. It could be concluded that MSCs treatment could ameliorate the histological and biochemical adverse effects in CP-induced cardiotoxicity.

Biography

Walaa Mohamed Sayed completed his MD at the age of 34 years from Cairo University. She is a Lecturer of Anatomy and Embryology at Anatomy and Embryology department, Kasr Al-Ainy Faculty of Medicine, Cairo University, Egypt. She has published 5 papers in reputed journals.

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