البحث السادس

Effect of Spironolactone on Doxorubicin Induced Cardiomyopathy in Adult Male Albino Rat: Histological, Pharmacological and Biochemical Study

Authors: MARWA O. ABDL EL ALL, HASSAN S. EL SAYED ALI ,**HEBA H. ROHYM**, AYMAN M. HELAL, RADWA M. AHMED, and MOHAMED M. KHAMISS ABD EL GUAAD

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Abstract

Background: Doxorubicin, an anthracycline drug, is an effective chemotherapeutic agent for treatment of solid tumors and hematological malignancies. However, its clinical use is limited by cardiotoxicity, such as irreversible degenerative cardiomyopathy, electrocardiographic changes, and congestive heart failure. The studies have been proved that spironolactone can ameleorate cardiac fibrosis. This drug is already indicated in treatment of doxorubicin-induced cardiotoxicity to prevent further deterioration. The Study aimed to elucidate protective and therapeutic effect of spironolactone on doxorubicin induced cardiomyopathy. **Material and Methods**: Fifty adult male albino rats weighing 180-220g were used in this study. The rats were divided into five groups 10 rats each: Group I (Normal control): Rats received single injection of saline solution 0.9% intraperitoneally once daily for 14 days. Group II (Doxorubicin adminstraion group): Rats were injected once with doxorubicin intaperitoneally at a dose of 10mg/kg once daily for 14 days. Group III (Doxorubicin and spironolactone pre-administration group): Rats were injected once with doxorubicin intaperitoneally at a dose of 10mg/kg once daily for 14 days and pretreated with spironolactone for seven days before doxorubicin administration Group IV (Doxorubicin and spironolactone co-administration group): Rats were injected once with doxorubicin intaperitoneally at a dose of 10mg/kg once daily and co-treated with spironolactone for 14 days Group V (Doxorubicin and spironolactone Post-administration group): Rats were injected once with doxorubicin intaperitoneally at a dose of 10mg/kg once daily for 14 days and followed by spironolactone for 7 days.

The dose of spironolactone was 40mg/kg given by oral gavage

Results: Doxorubicin injection exerted various histological and laboratory alterations such as myocardial fibrosis, ballooned mitochondria and elevated cardiac enzymes. Spirono actone could improve all histological and functional deterioration exerted by doxorubicin injection especially when given before doxorubicin administration. Conclusion: It could be concluded that Spironolactone could prevent the adverse histological and functional alterations induced by intraperitoneal injection of doxorubicin in the myocardium of adult male albino rat. K