Histological and ultrastructural changes in the heart and kidney of hypertensive experimental animals and the effects of antihypertensive drug enalapril an angiotensin converting enzyme inhibitor on both organs

Abeer Mostafa Abd El Hamid El Mahalawy

Antihypertensive drugs are used in treatment of hypertension and to decrease its complication as possible. One recent example was enalapril, an angiotensin converting enzyme inhibitor. Experimental hypertension was induced in rats by unilateral nephrectomy and desoxycorticosterone was dissolved in propylene glycol and injected weekly in a dose of 25mg/ kg subcutaneously (S.C) for six weeks and drinking water contained 0,9% sodium chloride, 0,2% potassium chloride and 2% glucose. This work was done to study the histological and ultrastructural changes that occur in heart and kidney of normotensive and experimentally induced hypertensive rats after administration of enalapril. The experiment was done on seventy adult male albino rats that were divided into two main groups as follows.I - Normotensive group:v This group included three subgroups:Subgroup IA (control untreated rats):It was formed of ten adult albino rats with normal systolic blood pressure with a range of 100- 130mmHg each rat received only distilled water orally and served as a control for normotensive rats.Subgroup IB (rats treated with enalapril for 3 weeks):It was formed of ten adult albino rats with normal systolic blood pressure with a range of 100- 130mmHg each rat was treated with enalapril maleate (Ezapril), which is a recent angiotensin converting enzyme inhibitor (Multipharma CO) in a dose 5mg/ kg body weight once per day orally via gastric tube for 3 weeks.Subgroup Ic (rats treated with enalapril for 6 weeks):It was formed of ten adult albino rats with normal systolic blood pressure with a range of 100-130mmHg treated with same dose of enalapril for 6weeks.II - Hypertensive group:v This group included four subgroups:Subgroup HA (control of hypertensive rats):It was formed of ten adult albino rats with normal systolic blood pressure with a range 100- 130mmHg, each rat was injected S.C. only by the vehicle propylene glycol in which DOCA was dissolved weekly every 6 weeks and served as a control for hypertensive rats.Subgroup IIB (hypertensive untreated rats):It was formed of ten adult albino rats with high systolic blood pressure (more than 130mmHg); each rat was injected S.C. with DOCA dissolved in propylene glycol in a dose 25 mg / kg body weight weekly for 6 weeks. Subgroup IIc (Hypertensive rats treated with enalapril for 3 weeks): It was formed of ten adult albino rats with high systolic blood pressure

(more than 130mmHg); each rat was injected S.C. with DOCA dissolved in propylene glycol in a dose 25 mg / kg body weight weekly for 6 weeks.Then each rat was treated with enalapril in a dose 5mg/ kg body weight once per day orally via gastric tube for 3 weeks.Subgroup HD (Hypertensive rats treated with enalapril for 6 weeks):It was formed of ten adult albino rats with high systolic blood pressure (more than 130mmHg); each rat was injected S.C. with DOCA dissolved in propylene glycol in a dose 25 mg / kg body weight weekly for 6 weeks. Then each rat was treated with enalapril in a dose 5mg/ kg body weight once per day orally via gastric tube for 6 weeks.Blood pressure was measured regularly every week by rat tail method, the systolic blood pressure was significantly increased in hypertensive untreated rats (group JIB) but after treatment of hypertensive rats with enalapril, the systolic blood pressure was significantly decreased in (group IIc& group IID) as compared to hypertensive untreated rats(group IIB){P