Republic of Iraq
Ministry of Higher Education
And Scientific Research
University of Baghdad
College of Pharmacy

POSSIBLE CARDIO-PROTECTION INDUCED BY ANTIOXIDANTS (ALLOPURINOL, VITAMIN E AND VITAMIN C) IN PATIENTS WITH SUPRAVENTRICULAR AND VENTRICULAR ARRHYTHMIAS TREATED BY ANTIARRHYTHMIC DRUGS

A thesis Submitted to Department of Clinical Pharmacy and the Committee of Post Graduate Studies of the College of Pharmacy – University of Baghdad as Partial Fulfillment of the Requirements for the Degree of Master in Clinical Pharmacy

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(B.SC. pharmacy 2000)

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1426 **2006**

Reactive oxygen species have been identified in animal studies as one of the principal factors responsible for pathogenesis of arrhythmias and contractile dysfunction in the heart. Since the role of antioxidant against the oxidative stress and lipid peroxidation in arrhythmia have never been reported in human, the present work was directed toward measuring the possible cardiac protective effect of antioxidant drugs (allopurinol, vitamin E and vitamin C) for patients with supraventricular and ventricular arrhythmias treated by antiarrhythmic drugs.

Plasma glutathione and malonedialdehyde have been measured for 104 patients, about 49.1% of them were females and 50.9 % were males, (range 41-73 years, mean 60.06 $\pm$ 8.9). suffering from supraventricular arrhythmias (N= 42), ventricular arrhythmias (N= 46) and mixed arrhythmias (N=16). Electrocardiogram (ECG) data includes P, QRS, PR, QT intervals and heart rate, were also measured before treatment and 12-24 and 36-48 hours after treatment. In addition to that, the percentages of mortality and improvement were also recorded in all studied groups. Control group received antiarrhythmic drugs only and other patients group received antioxidants (300 mg allopurinol, 1000 IU vitamin E, and 1000 mg vitamin C once daily) for three consecutive days in addition to antiarrhythmic drugs then the results of these groups were compared with that of control group and their values before treatment.

The addition of antioxidants to antiarrhythmic drugs (amiodarone, digoxin and propranolol) in case of supraventricular arrhythmias, and (amiodarone, Lidocaine and atenolol) in case of ventricular arrhythmia 36-48 hours after treatment, has resulted in a significant elevation of plasma glutathione levels and significant lowering in malondialdehyde levels.

The lowered glutathione and elevated plasma malonedialdehyde before treatment give an indicator that oxidative stress may play a role in the arrhythmogenesis in human; while the elevated glutathione and lowered malonedialdehyde after treatment reflect an enhancement in cardio-protection against oxidative stress and lipid peroxidation occurred in arrhythmia.

P and QRS wave's duration were prolonged but within normal range 36- 48 hours after treatment. The higher significant prolongations were in the vitamins groups as compared with control values, in both types of arrhythmias.

PR intervals undergone significant greater shortening (within normal lower limit) than control values after treatment in the vitamins groups in case of supraventricular arrhythmia; and in vitamin E and allopurinol in case of ventricular arrhythmias. These P, QRS, PR duration changes that occurred in the groups with an antioxidant were significantly different from the control group, which indicate that oxidative stress play, a possible, role in the electro-physiological changes during the arrhythmias.

QT intervals became significantly longer than control values after treatment; but not exceed the upper allowed limit, in both supraventricular and ventricular arrhythmias. These lengthening may be due to change in the rhythm to sinus or decrease in the extra systoles or ectopic beats originated at the beginning of arrhythmias, leading to the reduction in heart rate.

Heart rates were significantly reduced as compared to control value 12- 24 hours after treatment, with all antioxidant groups in the supraventricular arrhythmia; and only with allopurinol in case of ventricular arrhythmia; which mean that they may help in rapid restoration of heart rate when they are added with anti-arrhythmic drugs.

In conclusion, this study indicates that oxidative stress may have a significant role in arrhythmia in human, and the addition of antioxidant to the anti-arrhythmic drugs will give a good cardio-protection in both supraventricular and ventricular arrhythmias and increase the percentage of improvement in these patients.