SUMMARY

Modern life has brought with it profound changes in lifestyle and increased incidence of atherosclerotic vascular disease. It imposes many demands that lead to more difficulties in coping with them and more chronic stress.

Hundreds of studies over the last twenty five years have shown that chronic stress contributes to increased incidence of common life-threatening diseases including atherosclerosis and cardiovascular diseases. However, the mechanisms are not yet completely understood.

Recently, it is suggested that chronic psychological stress and its related destructive cascades of neuroendocrine, metabolic, inflammatory and neuropsychological changes as well as disturbances in cardiac autonomic activity (CAA) contribute to insulin resistance syndrome (IRS)-related abnormalities and, ultimately CVD. However, Confirmatory prospective studies are required.

A large body of evidence suggests existence of a relationship between renin-angiotensin system and the stress response. Angiotesin II is now classified as an important stress hormone. It is suggested that blockade of angiotensin II receptors may be important for prevention and treatment of diabetes mellitus and CVD that are usually associated with stress as well as other- induced disorders.

This study was carried out in order to investigate the effect of chronic immobilization stress, which is thought to be a mixture of physical and physchological stressors, on selected parameters of the metabolic cardiovascular risk factors in rats and to clarify the effect of

angiotensin II- type 1 receptor blocker (losartan) on these parameters under normal and chronic stressful conditions.

This study was carried on 4 groups of adult male albino rats. The first of them is the control group received no medications. The 2nd group subjected to chronic immobilization stress for 60 min daily for 10 consecutive days. The 3rd group received angiotensin II type 1 receptor blocker (losartan) in non stressed rats in a dose of 10mg/kgm/day orally for 10 consecutive days. The 4th group received losartan in a dose of 10mg/kgm/day orally for 10 consecutive days before the initiation of the daily stress regimen.

Then we evaluated the following parameters; serum corticosterone, insulin, glucose and lipid profile (triglycerides, cholesterol, HDL-C and LDL-C).

The obtained results of this study could be summarized as follow:

- Chronic immobilization stress resulted in significant increase in serum corticosterone, insulin, glucose, triglycerides, cholesterol and LDL-C and significant decrease in HDL-C as compared with the control group.
- Losartan intake in non stressed rats significantly decreased LDL-C while there were non significant alterations in other parameters as compared with the control group.
- Losartan intake before initiation of the daily stress regimen significantly decreased serum corticosterone, insulin, glucose, triglycerides and LDL-C and significantly increased HDL-C when compared with the chronic stressed group.
- When losartan is taken in chronic stressed rats, there was significant increase in serum corticosterone, glucose and LDL-C in losartan

treated chronic stressed rats while there was non significant change in serum insulin, cholesterol and HDL-C when compared with losartan treated non stressed rats.

- When losartan is taken in chronic stressed rats, there was significant increase in serum corticosterone and serum glucose in losartan treated chronic stressed rats while there was non significant change in other parameters when compared with the control group.

From the above results we conclude that stress mainly affects the cardiovascular system via the hypothalamo-hypophyso-adrenocortical axis besides the autonomic nervous system. Our results support the idea that renin-angiotensin system is involved in the stress induced cardiovascular response as well and that pharmacological inhibition of the peripheral and brain angiotensin II system by angiotensin II type 1 receptor (AT_1) blockers has a place in the prevention and treatment of stress related disorders beyond their other beneficial effects.

RECOMMENDATIONS

- Further studies on the effect of other angiotenin II receptor blockers as well as angiotensin converting enzyme inhibitors in experimental animal models and human to evaluate its role in the protection against stress induced cardiovascular diseases.
- Also more studies are needed to elucidate the effect of stress on other body systems and the beneficial effects of angiotenin II receptor blockers.