

SUMMARY AND CONCLUSIONS

Hypertension is a late manifestation of a much broader syndrome of cardiovascular risk factors such as abnormalities of lipid profile, insulin resistance, changes in endocrine and renal function, obesity, left ventricular hypertrophy and diastolic dysfunction. These associated risk factors may be present for years before the onset of high blood pressure and may precipitate coronary event either before or after the onset of high blood pressure. In addition, it appears that many of the changes in vascular structure and function occur before the onset of high blood pressure and may be responsible for its ultimate development. In these patients, treatment of high blood pressure will have very little impact on the outcome.

The development of high blood pressure in patients with hypertension syndrome may represent an advanced or perhaps irreversible stage of the disease process, and it is possible that treatment at this stage can only control blood pressure and slows the progression to cardiovascular disease. Identification and treatment of those patients before the onset of high blood pressure may provide a better opportunity for reversing disease process and protecting them from developing cardiovascular disease (CVD).

The aim of our research is to study the arterial compliance, renal, cardiac, ~~endocrine and metabolic disorders as predictors~~ of hypertension syndrome. Identification and treatment of these patients before the onset of

high blood pressure may provide a better opportunity for reversing the disease process and protecting patients from developing cardiovascular and renal diseases.

This study was conducted on 50 patients with essential hypertension , 50 normotensive offsprings of the hypertensive patients and 30 healthy control subjects without family history of hypertension matched for age, body mass index and blood pressure with the offspring group.

Patients with secondary form of hypertension , proteinuria , chronic renal or liver disease , peripheral vascular disease , heart disease other than ischemic heart disease and diabetes mellitus were excluded from this study.

All the subjects were subjected to thorough history, complete clinical examination , electrocardiography, echocardiography and body mass index was calculated, and laboratory investigations including urine analysis , complete blood picture , serum creatinine and blood urea, serum calcium, serum sodium, serum potassium, serum uric acid and fasting blood sugar and postprandial blood sugar.

Specific laboratory test includes :

- *Serum lipids* : Measured by standard enzymatic methods .
- *Microalbuminuria* : Measured by enzyme linked immunoassay (ELISA).
- *Serum insulin* : Measured by radioimmunoassay.
- *Plasma norepinephrine* : Measured by radioimmunoassay.

- **Plasma renin concentration:** Measured by immunoradiometric assay (IRMA).
- **Plasma homocysteine :** Measured by enzyme linked immunoassay (ELISA).
- **Plasma and urianary endothelin :** Measured by enzyme linked immunoassay (ELISA) , with separation of C18 using column extraction

Doppler and echocardiographic examination

The arterial compliance was measured by non invasive doppler ultrasound and calculated by the equation :

$$AC = 66.7 (T/L)^4$$

Where :

AC = arterial compliance.

T = transit time = transit time of aorta - transit time of subclavian.

L = distance from the mouth of subclavian to the aortic bifurcation.

Echocardiography and doppler echocardiography used to measure left ventricular structure and function

The results of the present study showed :

- Significant statistical increase of total cholesterol , triglycerides , LDL - c and decrease of HDL - c in hypertensive and offspring groups compared to control group.
- Significant statistical increase of microalbuminuria , insulin , norepinephrine , renin and homocysteine in hypertensive and offspring groups compared to control group.
- Significant statistical increase of plasma endothelin in hypertensive group compared to offspring and control groups . While non significant

statistical increase of plasma endothelin in offspring group compared to control group.

- Significant statistical decrease of urinary endothelin in hypertensive and offspring groups compared to control group.
- Significant statistical increase of left ventricular mass in hypertensive and offspring groups compared to control group.
- Significant statistical decrease of arterial compliance in hypertensive and offspring groups compared to control group.
- Significant statistical decrease of left ventricular diastolic function in hypertensive and offspring groups compared to control group. While ejection fraction was statistically decreased in hypertensive group compared to offspring and control groups, and there was no difference between offspring and control groups.

Comparing the hypertensive and offspring groups, significant statistical correlations were found:

- Negative correlation between arterial compliance and total cholesterol, triglycerides, LDL-c, insulin, renin, norepinephrine, microalbuminuria, homocysteine, p.endothelin, left ventricular mass and positive correlation with left ventricular function.
- Positive correlation between left ventricular mass and cholesterol, triglycerides, LDL-c, insulin, renin, norepinephrine, microalbuminuria, homocysteine, p.endothelin, and negative correlation with left ventricular function.

Conclusion

Finally, the present study confirmed that , many of the components of the hypertension syndrome as lipid abnormalities, changes in renal and endocrine function, insulin resistance, and changes in the structure and function of the left ventricle and of vascular smooth muscle in the vasculature precede the onset of high blood pressure, and that impaired Hcy metabolism may be considered as one component of the hypertension syndrome .

In terms of cardiovascular risk , the normotensive offspring with positive family history of hypertension have cardiovascular risk factors similar to that of the subjects with hypertension, the two groups are at similar risk for cardiovascular disease, the only difference being that the normotensive subjects have not yet developed high blood pressure, which seems to be a late manifestation of this disease process. Identification and treatment of these patients earlier in the disease process, before they develop high blood pressure, then we might have a bigger impact on the course of the disease and might protect them from developing high blood pressure and perhaps thereby protect them from developing cardiovascular disease.