Arterial compliance ,renal, cardiac,endocrine and metabolic disorders as A predictors of hypertension syndrome

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Hypertension is a late manifestation of a much broader syndrome ofcardiovascular risk factors such as abnormalities of lipid profile, insulinresistance, changes in endocrine and renal function, obesity, left ventricularhypertrophy and diastolic dysfunction. These associated risk factors may bepresent for years before the onset of high blood pressure and may precipitatecoronary event either before or after the onset of high blood pressure. Inaddition, it appears that many of the changes in vascular structure andfunction occur before the onset of high blood pressure and may beresponsible for its ultimate development. In these patients, treatment of highblood pressure will have very little impact on the outcome.The development of high blood pressure in patients withhypertension syndrome may represent an advanced or perhaps irreversiblestage of the disease process, and it is possible that treatment at this stage canonly control blood pressure and slows the progression to cardiovasculardisease. Identification and treatment of those patients hefore the onset ofhigh blood pressure may provide a better opportunity for reversing diseaseprocess and protecting them from developing cardiovascular disease (CVD).The aim of our research is to study the arterial compliance, renal,cardiac, endocrine· and-metabelie- ctiseRIers···~~· -of hypertensionsyndrome. Identification and treatment of these patients before the onset ofhigh blood pressun: may provide a better opportunity for reversing thedisease process and protecting patients from developing cardiovascular andrenal diseases.This study was conducted on 50 patients with essential hypertension ,50 nonnotensive offsprings of the hypertensive patients and 30 healthycontrol subjects without family history of hypertension matched for age,body mass index and blood pressun: with the offspring group.Patients with secondary form of hypertension, proteinuria , chronicrenal or liver disease, peripheral vascular disease, heart disease other thanischemic heart disease and diabetes mellitus were excluded from this study.All the subjects were subjected to thorough history, complete clinicalexamination, electrocardiography, echocardiography and body mass indexwas 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 andpostprandial blood sugar.Specific labontory test includes :- Serum lipiJJs: Measured by standard enzymatic methods .- MicrtHlllHlminuria : Measured by enzyme linked immunoassay (ELISA).- Serum

insulin: Measured by radioimmunoassay.- Plas”", norepinephrine: Measured by radioimmunoassay.- Pilmu I’elfbr COIICelltratio,,: Measured by immunoradiometeric assay(IRMA).- PhIs_ IIomocysmne Measured by enzyme linked immunoassay(ELISA).- PhIs_ 011II IlrUuuuy endotllelin : Measured by enzyme linkedimmunoassay (ELISA), with separation ofCl8 using column extractionDoppler and edaoc:ardiographic exameaationThe arterial compliance was measured by non invasive dopplerultrasound and calculated by the equation:AC =66.7 (TILtwhere: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 measureleft ventricular structure and functionThe results of the present study showed :- Significant statistical increase of total cholesterol, triglycerides , LDL - cand decrease of HDL - c in hypertensive and offspring groups comparedto control group.- Significant statistical mcrease of microalbuminuria , insulin ,norepinephrine , renin and homocysteine in hypertensive and offspringgroups compared to control group.- Significant statistical increase of plasma endothelin in hypertensive groupcompared to offspring and control groups . While non significantstatistical increase of plasma endothelin in offspring group compared tocontrol group.- Significant statistical decrease of urinary endothelin in hypertensive andoffspring groups compared to control group.- Significant statistical increase of left ventricular mass in hypertensive andoflilpring groups compared to control group.- Significant statistical decrease of arterial compliance in hypertensive andoflilpring groups compared to control group.- Significant statistical decrease of left ventricular diastolic function inhypertensive and offspring groups compared to control group. Whileejection fraction Was statistically decreased in hypertensive groupcompared to offspring and control groups, and there was no differencebetween offspring and control groups.Comparing the hypertensive and offspring groups , significantstatistical 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 positivecorrelation 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 leftventricular function.COBclusioBFinaly, the present study confirmed that, many of the components ofthe hypertension syndrome as lipid abnormalities, changes in renal andendocrine function, insulin resistance, and changes in the structure andfunction of the left ventricle and of vascular smooth muscle in thevasculature precede the onset ofbigh blood pressure, and that impaired Heymetabolism may be considered as one component of the hypertensionsyndrome ..In tenns of cardiovascular risk , the normotensive offspring withpositive family history of hypertension have cardiovascular risk factorssimilar to that of the subjects with hypertension, the two groups are atsimilar risk for cardiovascular disease, the only difference being that thenormotensive subjects have not yet developed high blood pressure, whichseems to be a late manifestation of this disease process. Identification andtreatment of these patients earlier in the disease process, before they develophigh blood pressure, then we might have a

bigger impact on the course of thedisease and might protect them from developing high blood pressure andperhaps thereby protect them from developing cardiovascular disease.