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RELATIONSHIP BETWEEN INSULIN RESISTANCE AND THE RENIN-ANGIOTENSIN SYSTEM – ANALYSIS IN PATIENTS WITH ESSENTIAL AND RENOVASCULAR HYPERTENSION
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Insulin resistance is frequently observed in patient with essential hypertension (EHT), and the renin-angiotensin system (RAS) has been suggested to be related to the development of insulin resistance. Renovascular hypertension (RVHT) has a special feature represented by highly activated systemic RAS. The aim of the present study was to investigate the role of circulating RAS in the mechanisms of insulin resistance in patients with RVHT and EHT.

Subjects consisted of age- and sex-matched 13 RVHT and 89 EHT patients. Patients with overt diabetes (HbA1c $\geq$7.0% and/or taking oral hypoglycemic agents, insulin therapy) and secondary hypertension except RVHT were excluded. Plasma renin activity (PRA), fasting plasma glucose (FPG) and immuno-reactive insulin (IRI) were measured. Part of subjects had oral glucose tolerance test (OGTT) including glucose and IRI at 0, 30, 60, 120 minutes. HOMA-R index was calculated by (FPG x IRI)/405 as an index of insulin resistance. Sum of IRI during OGTT ($\Sigma$IRI or IRI at 120 minutes (120 IRI) were used for indices of hyperinsulinemia.

Characteristics of subjects including body mass index (BMI), blood pressure level and prevalence of hypertension in relatives were similar in RVHT and EHT groups. PRA was significantly higher in RVHT than EHT (RVHT:8.48±2.65 vs. EHT: 2.15±0.36 ng/ml/hr, p<0.001, adjusted for BMI). There were no significant differences in HOMA-R, $\Sigma$IRI and 120IRI between two groups. Significant correlations between PRA and all indicators of insulin sensitivity were observed in EHT (PRA vs. HOMA-R, $\Sigma$IRI and 120IRI, R$^2$=0.095, 0.079, 0.154, p=0.035, 0.047, 0.026, respectively), but not in RVHT. In order to further investigate the role of genetic background in the mechanism of insulin resistance, comparisons of insulin sensitivity indicators were performed in positive and negative groups of hypertension family history. In consequence, 120IRI was significantly higher only in male group with hypertension family history than without family history (p=0.043) though HOMA-R and $\Sigma$IRI did not show any differences in all groups. In conclusion, the RAS activation in renal artery stenosis might not be associated with development of insulin resistance. However, the systemic RAS may modulate insulin sensitivity in essential hypertensives, who are supposed to be influenced by genetic backgrounds.

Key Words: renin-angiotensin system, insulin sensitivity, renovascular hypertension

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ARE CALCIUM ANTAGONISTS BENEFICIAL IN THE DIABETIC HYPERTENSIVE PATIENT? 
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We analyzed the available data to assess the benefits of calcium antagonists in hypertensive patients with diabetes mellitus. A MEDLINE search of English-language articles published until January 2002 was undertaken using the terms diabetes mellitus, hypertension or blood pressure, and therapy. Pertinent articles cited in the identified papers were also reviewed. Included were only prospective randomized studies of more than 12 months’ duration that evaluated the effect of drug treatment on morbidity and mortality in diabetic hypertensive patients. We estimated the effect of treatment with calcium antagonists on morbidity and mortality in comparison to placebo, conventional therapy, and therapy that blocks the renin angiotensin system.

Key Words: Obesity, Body mass index, Blood pressure