Metabolism

184. Fasting Serum Insulin, Insulin Resistance and Common Carotid Artery Intima Media Thickness in Offspring of Patients with Metabolic Syndrome

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Objective of the Study: Metabolic abnormalities like Type-2 diabetes mellitus (T2DM), hypertension (HTN), hyperlipidaemia and central obesity, accelerates premature atherosclerosis and coronary artery disease (CAD). Insulin resistance (IR) has been proposed as a common unifying factor for these metabolic abnormalities, giving rise to the concept of metabolic syndrome. Subclinical atherosclerosis can be detected by measuring common carotid artery intima-media thickness (CCA-IMT). Aim of this study is to assess correlation of CCA-IMT, fasting serum insulin (FSI) and IR with demographic parameters like body mass index (BMI), waist-hip ratio (WHR) in healthy offspring of patients with metabolic syndrome.

Methodology: Metabolic syndrome was detected by presence of T2DM (ADA criteria), HTN (JNC 7), triglyceride ≥ 160 mg/dl, obesity [(BMI > 30; WHR > 1.0 (Males), > 0.85 (Females)] and IR. FSI was estimated by radio immuno assay (RIA). IR was estimated using the homeostasis model assessment (HOMA). CCA-IMT was measured by high-resolution B-mode ultrasonography (normal < 0.8 mm). Results were analyzed using student’s t test, regression analysis and χ² tests. The cut off value of HOMA-IR in our study was 5.89.

Results: FSI, IR and CCA-IMT in 160 healthy offspring of patients with metabolic syndrome (Gr-A) were compared with 150 age and sex matched controls whose parents are without metabolic syndrome (Gr-B). Baseline parameters (age, smoking, blood pressure, BMI, WHR, fasting and post-prandial blood glucose) in the two groups were similar (p > 0.05). The mean FSI, HOMA-IR and CCA-IMT in the groups (25.9 ± 12.6 µIU/ml vs. 23.8 ± 13.4 µIU/ml; 5.64 ± 3.41 vs. 4.87 ± 3.66; 0.55 ± 0.11 mm vs. 0.54 ± 0.17 mm respectively) were similar (p > 0.05). In Gr-A, positive correlation was found between WHR and FSI (r = 0.37, p < 0.01); WHR and HOMA-IR (r = 0.33, p < 0.01); BMI and FSI (r = 0.14), BMI and HOMA-IR (r = 0.22, p < 0.05), FSI and CCA-IMT (r = 0.19), and HOMA-IR and CCA-IMT (r = 0.23, p < 0.05); CCA-IMT and age (r = 0.14). In contrast, no such positive correlation in these parameters was noted in Gr-B.

Conclusion: We conclude that demographic parameters like BMI and WHR correlate well with parameters like FSI and HOMA-IR in offspring of patients with metabolic syndrome as compared to the general population and may be considered as predictors of sub-clinical atherosclerosis in these cohorts.

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