SURROGATE MARKERS OF INSULIN RESISTANCE OBTAINED FROM ORAL GLUCOSE TOLERANCE TEST (OGTT) IN DIFFERENT PHENOTYPES OF POLYCYSTIC OVARY SYNDROME

Bozic Antic I[1], Bjekic-Macut J[2], Vojnovic Milutinovic D[3], Ilic D[1], Popovic B[1], Bogavac T[1], Kastratovic-Kotlica B[4], Isailovic T[1], Elezovic V[1], Ognjanovic S[1], Petakov M[1], Damjanovic S[1] Macut D[1]

[1]Clinic for Endocrinology, Diabetes and Metabolic Diseases, CCS, [2]CHC Bezanijska kosa, [3]Institute for Biological Investigations „Siniša Stanković", University of Belgrade, [4]Clinic of Gynecology and Obstetrics, and Faculty of Medicine, University of Belgrade, Belgrade, Serbia

Introduction

Insulin resistance (IR) is a well recognized feature in women with polycystic ovary syndrome (PCOS). The aim of this study was to analyze IR indices obtained from oral glucose tolerance test (OGTT), in different PCOS phenotypes.

Methods

We evaluated 240 PCOS women (PCOS: 24.86 ± 5.97 kg/m^2; 25.25 ± 4.98 years) diagnosed using ESHRE/ASRM criteria and 70 BMI-matched healthy women (Controls: 26.14 ± 4.86 kg/m^2; 30.76 ± 5.82 years). PCOS group was divided into 4 phenotypes: A [anovulation (ANOV), hyperandrogenism (HA), polycystic ovary morphology (PCOM)], B (ANOV,HA), C (HA,PCOM) and D (ANOV,PCOM). Phenotype D had lower body mass index in comparison to all other phenotypes (p<0.05). Standard OGTT with 75 gr glucose was performed in all subjects. IR was estimated by the homeostasis model assessment of insulin resistance (HOMA-IR), insulin sensitivity index (ISI), hepatic insulin resistance index (HIRI), insulinogenic index (IGI). Areas under insulin (AUCi) and glucose (AUCg) and their ratio, termed the insulin secretion-sensitivity index-2 (ISSI-2) were calculated.

Results

The whole PCOS group in comparison to Controls had higher levels of basal glucose (4.89 ± 0.45 vs. 4.57 ± 0.50 mmol/L, p=0.003) and insulin (17.16 ± 10.36 vs. 11.95 ± 6.53 mU/L, p<0.001), HOMA-IR (3.64 ± 2.38 vs. 2.66 ± 1.48, p<0.001), HIRI (3.98 ± 2.65 vs. 2.20 ± 0.85 x10^6, p=0.027), IGI (22.13 ± 15.86 vs. 10.31 ± 4.13, p=0.027), AUCg (711.63 ± 153.87 vs. 670.68 ± 86.48, p=0.012), AUCi (7847.97 ± 4660.48 vs. 4647.80 ± 1665.78, p=0.029) and ISSI-2 (10.83 ± 5.49 vs. 6.51 ± 2.14, p=0.019) while ISI (4.50 ± 2.14 vs. 6.04 ± 2.71, p=0.032) was lower. Phenotype B had higher levels of basal insulin and HOMA-IR then phenotypes A, C, D while AUCi, HIRI, ISSI-2 were higher and ISI was lower then in phenotypes C and D. There were no differences in basal glucose, AUCg and IGI between phenotypes.

* p<0.05 *vs.* Controls
p<0.05 *vs.* Phenotype B
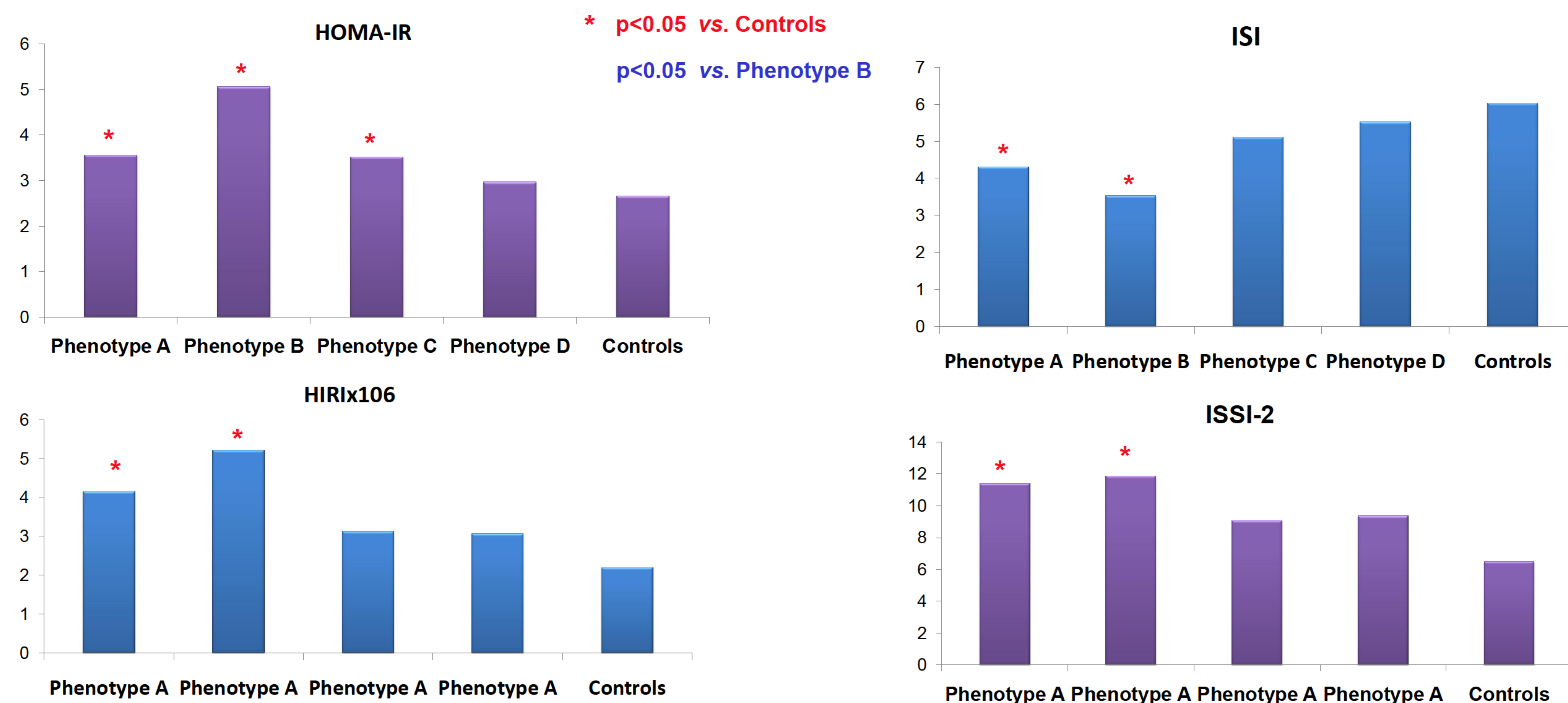
Conclusion

In our group of women with PCOS, classical hyperandrogenemic phenotype B was characterized with the most exaggerated insulin resistance indices.