

ORAL PRESENTATION

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Association between insulin resistance with UCP2 -866G/A, UCP2 45BP INS/DEL, UCP3 -55C/T, GHSR1A RS2922126, GHSR1A RS509035 and PRO12ALA PPAR γ 2 gene polymorphisms in obese female adolescents in Yogyakarta, Indonesia

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Aims

The aim of this study was to analyze the association between polymorphism of several genes encoded the uncoupling proteins (UCPs), ghrelin receptors (GHSRs) and peroxisome proliferator-activated receptor gamma (PPAR γ) with insulin resistance in obese female adolescents in Yogyakarta, Indonesia.

Methods

Screening for obesity using CDC 2000 criteria was done in 2121 female adolescents aged 13-14 years old in Yogyakarta. BMI > 95th percentile was considered as obese. Among the obese subjects, 78 agreed to be enrolled for this study. HOMA-IR > 3.16 was used to determine the insulin resistance status. DNA was isolated from peripheral blood and UCP2 -866 G/A, UCP3 -55C/T, GHSR1a rs2922126, GHSR1a rs509035 and Pro12Ala PPAR γ 2 genotypes were analyzed by PCR-RFLP. UCP2 45bp ins/del genotype was analyzed by PCR.

Results

Among the 78 obese adolescent girls, 44 (56.4%) were at insulin resistance state. All subjects had Pro12Pro

PPAR γ 2 and del/del UCP2 genotype. Compared to the other polymorphisms analyzed in this study, the AA genotype and the A allele of UCP2 -866 G/A polymorphism was found to have highest association with insulin resistance state (OR: 2.75; 95% CI 0.65 – 11.62; p=0.17 for AA genotype; OR 1.50; 95% CI 0.79 – 2.83; p=0.22 for A allele). In UCP3 -55C/T polymorphism, TT genotype also showed positive statistically not significant association with insulin resistance (OR 2.32; 95% CI 0.38 – 14.12; p=0.36), so did T allele (OR 1.30; 95% CI 0.67 – 2.50; p=0.45). Genotyping of the Ghrelin receptor gene showed also non significant association with insulin resistance, i.e. the AA genotype (OR 2.25 ;95% CI 0.21–24.4; p=0.63) and A allele (OR 1.05; 95% CI 0.54 – 2.05; p=0.89) of the GHSR1a rs509035 polymorphism as well as AA genotype (OR 2.03; 95% CI 0.54 – 7.57; p=0.28) and A allele (OR 1.36 ; 95% CI 0.72 – 2.58; p=0.34) of the of the GHSR1a rs2922126 polymorphism.

Conclusion

We observed not statistically significant association between gene polymorphism of UCP2 -866G/A, UCP3 -55C/T, GHSR1a rs509035, GHSR1a rs2922126 and the incidence of insulin resistance in obese female adolescent in Yogyakarta Indonesia.

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