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Association of set of alleles with general and central obesity and its related metabolic disorders

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Statement of the Problem: The prevalence of obesity, which is defined as a body mass index (BMI) of 30 kg/m2 or higher, has been increasing dramatically. Furthermore abdominal distribution of body fat carries the greatest risk for type-2 diabetes, stroke and coronary artery disease. Many studies illustrated the relative contributions of genetics and environment to the etiology of obesity. Some protein contribute to body fat accumulation through their role in thermogenesis such as Beta 3-adrenergic receptor (B3ADR), uncoupling protein 1 (UCP-1) and G protein beta3 (GB3), while others work more central in the regulation of appetite such as serotonin receptors (5HTA2).

Aim: The purpose of the this study is to investigate the role of set of alleles encoding for different genes related to thermogenesis and appetite regulation in the distribution of body fat and their effect on obesity related dyslipidemia.

Methodology: A case control study which consisted of 460 individuals of different BMI (204 with BMI <25 kg/m2 and 256 with BMI ≥25 kg/m2). The following polymorphism were studied G1438 A of 5-HT2A gene, Trp64Arg of B3ADR, C825T of GB3 and A3826G of UCP-1 by restriction fragment length polymorphism polymerase reaction.

Findings: The highest risk of obesity was seen among carrier of AG and GG genotype of 5-HT2A gene (OR=3.2, 95% CI= 2.1-4.8). The impact of UCP1 on obesity was found to be the least, carriers of AG and GG were at risk 1.8 (OR=1.8, 95% CI=1.2-2.6). Furthermore upon including different haplotypes in the analysis the risk was found to be 2.8 (OR=2.8, 95% CI=1.8-4.5). The same alleles were related to dyslipidemia.

Conclusion: Our data support an additive effect of the alleles of specific genes encoding G1438 A of 5-HT2A gene, Trp64Arg of B3ADR, C825T of GB3 and A3826G of UCP-1 in obesity and its related dyslipidemia.

Biography

Neveen Salaheldin Hemimi is a Professor of Biochemistry and Molecular Biology. She is a Member of American Society of Biochemistry and Molecular Biology (ASBMB). She has good experience in teaching the course of biochemistry and molecular biology to MBBS and BPharm students through the previous 26 years. She is working in UAE since 1997, started in Dubai Medical College and then in Ras al-Khaimah Medical and Health Science University, UAE. Her research area of interest is the field of genetic polymorphism in relation to common health problem such as diabetes mellitus, hypertension, polycystic ovary syndrome, metabolic syndrome and obesity. She has done many researches to find genetic risk factors for those common diseases in the community. She has supervised the students in many research works which was published and/or presented in different scientific conferences.

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