

The effect of leptin promoter and leptin receptor gene polymorphisms on lipid profile among the diabetic population: modulations by atorvastatin treatment and environmental

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Abstract: PURPOSE: This study investigated the effect of leptin (LEP) 2548A/G and leptin receptor (LEPR) Q223R polymorphisms on the levels of HDL, LDL, TG, and total cholesterol (t-chol). In addition, the interactions between examined polymorphisms, statin therapy and environmental factors on lipid profile were examined. METHODS: Adult diabetic patients (n=418) were recruited from diabetes/endocrine clinics in north of Jordan. Lipid profile was measured using standard protocols. Genotyping of LEP 2548A/G and LEPR Q223R polymorphisms was carried out using polymerase chain reaction-restriction fragment length polymorphisms. RESULTS: No significant association between LEP 2548A/G and LEPR genotypes and levels of HDL (P = 0.83), LDL (P = 0.40), TG (P = 0.23) and t-chol (P = 0.91). However, in patient on atorvastatin, those with GG or GA genotypes of LEP 2548 experienced significantly higher levels of LDL compared with AA genotype of LEP 2548 (P < 0.002). Patients with dyslipidemia had higher TG in comparison with those without (P < 0.03). Smokers had lower HDL and higher TG levels compared with none smokers or previous smokers (P < 0.002 and P < 0.02, respectively). Female patients tend to have a higher HDL in comparison with male patients (P < 0.05). Patients with HbA1c value greater than or equal to 7 had higher LDL and t-chol compared with patients who had an HbA1c levels of <7 (P < 0.02 and < 0.005, respectively). Patients with disease duration of 5 or more years had a lower HDL compared with those patients with duration of <5 years (P < 0.03). CONCLUSION: In conclusion, and although lipid profile regulation is a multifactorial process, -2548G/A LEP polymorphism seems to affect statins treatment response among diabetic patients. More studies are required to specifically define factors that influence lipid profiles interaction with statin treatment response especially among patients with diabetes.