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Assessment of Osteocalcin and Homocysteine Levels in Saudi Female Patients with Type II Diabetes Mellitus

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Abstract : Studies suggest a crosstalk between bone and metabolism through Osteocalcin (OC), a bone-derived protein that plays an important role in regulating glucose and fat metabolism. Studies relate type II Diabetes Mellitus (DMII) with Homocysteine (Hcy) and cardiovascular diseases (CVD). This study investigates the relationship between levels of OC, Hcy, and DMII in 85 subjects of which 50 were diabetic female patients (29–65 years) and 35 healthy controls. OC and Hcy levels were measured in fasting blood samples using immunoassay analyzer. Fasting serum glucose, glycated hemoglobin, lipid profile, were estimated by automated Siemens Dimension XP auto-analyzer. A significant increase in the frequency of low OC levels ($p < 0.001$) and high Hcy levels ($p < 0.001$) was detected in diabetic patients compared to controls (chi-squared test). Using ANOVA test, patients were divided into tertiles based on plasma OC and Hcy levels; fasting serum glucose varied inversely with OC but directly with Hcy tertiles ($p=0.049$, $p=0.033$ respectively). Atherogenic Index of Plasma (AIP=Log TG/HDL) predicts that diabetic patients with 36% high and 15% intermediate cardiovascular risk had increased frequency of low OC levels compared to low-risk patients ($p=0.047$). Another group of diabetic patients with 39% high and 11% intermediate CVD risk had increased frequency of high Hcy levels ($p=0.033$). A significant negative correlation existed between OC and glucose ($r = -0.318$; $p = 0.035$) while correlation between glucose level and Hcy ($r = 0.851$ $p=0.022$) was positive. Hence, low serum OC levels and high Hcy levels were associated with impaired glucose metabolism that may increase cardiovascular risk in DMII.

Keywords : osteocalcin, homocysteine, type 2 diabetes, cardiovascular
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