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Evaluation of lipid parameters and their association with age, glycaemic parameters and anthropometric measurements of newly diagnosed patients with type 2 diabetes mellitus, Galle, Sri Lanka

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Serum lipid abnormalities in type 2 diabetic patients increase the risk of macrovascular diseases. Present investigation intended to assess the association of serum lipid parameters vs age, fasting plasma glucose (FPG) concentration, glycated haemoglobin (HbA_{1c}), body mass index (BMI) and waist circumference (WC) in newly diagnosed type 2 diabetic patients. 147 newly diagnosed type 2 diabetic patients were recruited to the study from Galle district, Sri Lanka. Age and anthropometric measurements were recorded. Biochemical parameters were estimated on collected fasting venous blood sample. Patients with known renal, liver, cardiac, respiratory, thyroid, psychiatric and any other chronic or acute diseases, and pregnant women were excluded from the study. Individuals who are using antilipidaemic drugs were also excluded. The correlation between lipid parameters vs age, FPG, HbA_{1c}, BMI, and WC was evaluated using linear correlation analysis. Binary logistic regression analysis was implemented to further evaluate the association between significantly correlated parameters and abnormal lipid parameters. A probability value of ≤ 0.05 was considered as statistically significant. The mean age, BMI, WC, FPG and HbA_{1c} of the study subjects were 48.48 ± 7.13 years, 25.16 ± 3.98 kgm⁻², 88.81 ± 9.06 cm, 7.47 ± 0.69 mmol/L, 6.41 ± 0.64 % respectively. Mean lipid parameters for HDL-C, TG, TC, LDL-C and VLDL-C were 1.20 ± 0.37 mmol/L, 1.47 ± 0.45 mmol/L, 4.73 ± 0.84 mmol/L, 2.86 ± 0.89 mmol/L, 0.67 ± 0.20 mmol/L respectively. Age ($r = 0.195$ $p = 0.02$) and FPG ($r = 0.157$ $p = 0.04$) showed significant positive correlation with TC while BMI ($r = -0.170$ $p = 0.04$) and WC ($r = -0.197$ $p = 0.02$) showed significant negative correlation with HDL-C. The concentration of FPG also showed a significant positive correlation ($r = 0.197$ $p = 0.02$) with LDL-C. Regression analysis revealed that age (OR = 1.07, CI 1.01-1.13, $p = 0.02$) and FPG (OR = 1.63, CI 0.95-2.79, $p = 0.05$) were significantly associated with TC and LDL-C respectively. Significant correlations were observed between lipid parameters and age, BMI, WC and FPG in the study subjects. Increasing age and FPG levels of newly diagnosed type 2 diabetic patients are significantly associated with the lipid profile parameters of TC and LDL-C respectively. Hence, interventions in appropriate glycaemic control by healthy diets and lifestyle changes should be implemented to delay the progression of lipid abnormalities in newly diagnosed type 2 diabetic patients.

Keywords: Age, Body mass index, Lipid profile, Type 2 diabetes mellitus, Waist circumference

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