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Correlation between HbA1c Values and Lipid Profile in Saudi Type 2 Diabetic Patients

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Abstract

Aim: This study was designed to evaluate the correlation between levels of HbA1c and various lipid parameters in type2 diabetics of Saudi population. **Method:** Fasting venous blood samples were collected from 110 type2 diabetic patients. The serum was used for analyzing Fasting Blood Glucose (FBG), HbA1c, Total Cholesterol (TC), HDL-cholesterol(HDL-c) and Triglycerides (TG).The risk ratios(TC/HDL-c), LDL-c/HDL-c) were also calculated. The patients were classified into two groups depending on their HbA1c: Good Glycemic Control (GCC) group having HbA1c <7.0% (n=24) and Poor Glycemic Control (PGC) group having HbA1c >7.0% (n=86). **Results:** Patients with HbA1c value>7.0% had significantly higher values of TC, TG, LDL-c, LDL-c/HDL-c ratio and risk ratio (TC/HDL-c) as compared to the patients with HbA1c <7.0%. However, there was no significant difference in values of HDL-c between the two groups. Statistically significant positive correlation was observed between HbA1c and TC, LDL-c, LDL-c/HDL-c ratio, non-HDL-c and risk ratio. The correlation of HbA1c with TG was positive and statistically significant. **Conclusion:** These findings indicate that HbA1c can be utilized for screening high risk diabetic patients for early diagnosis of dyslipidemia and timely intervention with lipid lowering drugs.

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Introduction

Diabetes is a metabolic disorder resulting either from insulin deficiency or insulin resistance. Diabetic mellitus (DM) is a global epidemic with rapidly increasing prevalence in both developing and developed countries. It is becoming more and more prevalent in Saudi society. In Saudi Arabia, almost one Saudi in four beyond the age of 30 has DM. It is projected that it will be 40-50% in 2020 *(Al-Gannass, 2009*). Diabetes is more prevalent among Saudis living in urban areas (25.5%) compared to rural Saudis (19.5%) and 90% of diabetics suffer from type 2 diabetes mellitus (T2 DM). Economic drift and its consequent changes in lifestyle in the kingdom have led to this alarming increase in the prevalence of diabetes which has now become the greatest health threat *(Al-Shehriet al.,2013).*The cost of diabetes is challenging health system even in the wealthiest countries. In low-income countries, it threatens to reverse health and economic progress made towards the Millennium Development Goals *(Hashemniaet al., 2012;IDF, 2010).* Many epidemiological studies have demonstrated that diabetes is well known risk factor for developing cardiovascular and cerebrovascular disease in general population *(Bener & Zirie, 2007).* The main contributory factors for these complications are uncontrolled DM and dyslipidemia. The dyslipidemia seen in DM patients are characterized by increased triglycerides level, high low density lipoproteins, and low high density lipoproteins. Worsening of glycemic control deteriorates lipid and lipoprotein abnormalities and particularly of DM. The American Diabetes Association(ADA) has designated HbA1c level of<7% as a goal of optimal blood glucose control *(ADA,2003).*Estimated risk of CVD has shown to be increased by18% for each1% increase in absolute HbA1c value in diabetic