ABSTRACTS OF RESEARCH PAPERS

RP 14

The Correlation between Direct and Calculated LDL-C among Patients Referred for Lipid Profile at a Tertiary Care Hospital, Sri Lanka

Senarathne UD[1,2], Dayanath BKTP[2], Bandara EMS[1], Prabhashini WPA[3], Sandaruwan VS[3], Kumarapeli KACJ[3], Rajapakshe RRN[3]

[1]University of Sri Jayewardenepura, Sri Lanka

[2]North Colombo Teaching Hospital, Sri Lanka

[3]Open University, Sri Lanka

Introduction

Patients with metabolic syndrome (MS) have altered lipoprotein metabolism that affects usual ratios between different lipid fractions; especially triglycerides. This may affect the LDL-C estimation by Friedewald formula (FF) even with triglyceride levels <400 mg/dL. Our objective was to describe correlation between direct and calculated LDL cholesterol (LDL-C) among patients referred to a laboratory.

Methods

A cross sectional study was conducted among 291 patients referred for lipid profile to a tertiary care hospital Sri Lanka, over a period of one month. The average percentage of patients with MS referred to laboratory for lipid profile is 60-65%. Direct LDL-C and conventional lipid profile with calculated LDL-C by FF were measured.

Results

The mean fasting triglyceride level in the sample was 138.6 mg/dL (SD:64.9; range:45-464 mg/dL). The mean calculated LDL-C was 103.6 mg/dL (SD:38.4, range:14.3-233 mg/dL) while mean direct LDL-C measurement was 111.6 mg/dL (SD:39.6, range:11.2-252.2 mg/dL). The calculated and direct LDL-C measurements had good correlation at different levels of triglycerides (r^2=0.9319, r^2=0.9188, r^2=0.9542, r^2=0.9121 at triglyceride <100 mg/dL, 101-150 mg/dL, 151-200 mg/dL, >200 mg/dL respectively). Use of calculated LDL-C caused a mean negative bias of 7.38 mg/dL with a percentage bias of >5.46% (the desirable specification for bias) in 63.9% of the patients while only 1/3 of them had a triglyceride level >150 mg/dL and the majority (117; 63%) had normal triglyceride levels.

Conclusions

Calculated LDL-C by FF may result in clinically significant bias even in patients with normal triglyceride levels. Therefore, normal triglyceride levels do not warrant accurate LDL-C results by FF especially if the metabolic disease status of the patient is unknown.

Keywords

Calculated LDL-C, direct LDL-C, Friedewald formula