Research Letter

Presence of elevated non-HDL among patients with T2DM with CV events despite of optimal LDL-C – A report from South India

Abstract

Elevated non-high density lipoprotein cholesterol (non-HDL-C) was the commonest lipid abnormality among T2DM patients with cardiovascular events (CV) events. Prevalence of elevated non-HDL-C was 21.6% among patients who were on statin therapy and with optimal low density lipoprotein-cholesterol (LDL-C) levels. Despite an optimal LDL-C level, 47% of the T2DM patients with CV events had elevated non-HDL-C.

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Diabetes is a common secondary cause of hyperlipidemia, particularly if glycemic control is poor. Indians are genetically predisposed to the development of coronary heart disease (CHD) due to dyslipidemia and low levels of high density lipoproteins.1 Recently, it has been found that non-high density lipoprotein cholesterol (non-HDL-C) has a distinct advantage over low density lipoprotein-cholesterol (LDL-C) in predicting CHD.2,3 Perhaps there is paucity of data on non-HDL-C from Indian population and not much attention has been paid to use of non-HDL-C for routine clinical practice in India. Hence, the present study was aimed to assess the non-HDL-C level among patients with T2DM and to determine the various lipid abnormalities including elevated non-HDL-C among T2DM patients who had a history of cardiovascular events.

A hospital-based, observational study was conducted among 808 patients with T2DM, who attended a tertiary care hospital for DM during the study period of October 2014 to March 2015. The study population included all patients aged between 30 and 65 years with duration of diabetes more than five years and were screened for laboratory investigations and medications. Patients with T1DM and gestational diabetes were excluded. The patient history related to cardiovascular events was also recorded. The study was approved by the ethics committee of the institution.

The most common lipid abnormalities were low HDL-C (65%) followed by elevated non-HDL-C (43%). Out of 808 patients, only 58 patients had a previous history of cardiovascular events (CV) events. Among the patients with CV events, 73% had optimal LDL-C. Despite this, 47% of the patients had elevated non-HDL-C. An elevated non-HDL-C was the commonest lipid abnormality among those with CV events and more than 77% had poor glycemic control. Of the total study population, 67.1% of them were on statin therapy. The prevalence of elevated non-HDL-C was 21.6% among patients who were on statin therapy and with optimal LDL-C levels.

In the present study, nearly 47% had elevated non-HDL-C among patients with a history of cardiovascular event (Table 1). This indicates that many patients with type 2 diabetes fail to reach goals for non-HDL-C. They meet their target LDL-C goal but still develop complications from atherosclerotic vascular disease and suffer from cardiovascular events. One of the main limitations of this study was that it is not an intervention study to confirm the superiority of non-HDL-C over LDL-C. Further studies on non-HDL-C must be undertaken in future to recommend non-HDL-C as the primary target for patients with type 2 diabetes.

In conclusion, the study highlights that there are lipid abnormalities like lower HDL-C and higher non-HDL-C levels among patients with type 2 diabetes with CV events. Despite an optimal LDL-C level, 47% of the patients with CV events had an elevated non-HDL-C adding to the residual risk of CV.
events. Thus, it is recommended that non-HDL-C should be included in the routine lipid assessment of patients with type 2 diabetes.

Conflicts of interest

The authors have none to declare.

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Table 1 – Prevalence of lipid abnormalities and glycemic status among patients who had history of CV events (n = 58) (7.2%).

| Glycemic status | Lipid abnormalities |
|-----------------|---------------------|
| HbA1C ≥ 7%      | TC (mg/dL) | LDL-C (mg/dL) | HDL-C (mg/dL) | TG (mg/dL) | Non-HDL-C (mg/dL) |
| 45 (77.6%)       | 11 (19%)     | 16 (27.6%)   | 23 (39.7%)    | 13 (22.4%) | 27 (47.6%)       |

* Values are n (%).