

Hypertriglyceridemia as a Risk Factor for Ischemic Heart Disease

A Sankar

Assistant Professor, Department of General Medicine, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India

Abstract

Introduction: There has been considerable controversy over whether elevated levels of triglycerides (TGs), or hypertriglyceridemia, are an independent risk factor in coronary heart disease.

Aim: This study aims to study the relationship between risk factors for atherosclerosis using triglyceride levels in patients of unstable angina.

Methods: In this prospective study, patients with ST-segment elevation myocardial infarction (STEMI), non-STEMI, or unstable angina were included in the study. Patients undergone fasting lipid profile test.

Results: A total of 50 patients, 23 males and 27 females, were included in this study. 68% of patients in high TGs had lower high-density lipoproteins level. 81% of patients in high W-H ratio had increased TGs level. 60% of overweight patients had increased TGs level. 85% of diabetic patients had increased triglyceride level.

Conclusion: There is an association between hypertriglyceridemia in ischemic heart disease patients. Hence, assessing TGs are important in ischemic heart diseases.

Key words: Heart diseases, Hypertriglyceridemia, Risk factor

INTRODUCTION

There is sudden increase in incidence of heart disease seen in our people, as they have adopted a more sedentary westernized lifestyle, together with the intake of high-fat and high-salt diet and processed foods that have come to be associated with technological affluence.^[1] A long-standing association exists between elevated triglyceride levels and cardiovascular disease (CVD). However, the extent to which triglycerides (TGs) directly promotes CVD or represents a biomarker of risk has been debated for 3 decades.^[2,3] Two articles recently published in the Journal of the American Medical Association directly address these issues by comparing fasting with no fasting (postprandial) TGs with respect to the prediction of future cardiovascular

events.^[4] Some statin trials have also assessed the potential effect of on-treatment TG levels on CVD risk, mainly in the secondary analyses and found mixed results. Air force/Texas coronary atherosclerosis prevention study found no association of on-treatment TG level to CVD risk, similar in line to Veterans Affairs high-density lipoproteins (HDL) intervention trial where TG level was not predictive of CVD event, despite significant benefit observed in CV outcome in these trials.^[5]

Aim

This study aims to study the relationship between risk factors for atherosclerosis using triglyceride levels in patients of unstable angina.

MATERIALS AND METHODS

This prospective study was conducted in the department of medicine in a tertiary care hospital. Informed consent from patients was obtained. Patient presented 1st time with ST-segment elevation myocardial infarction (STEMI), non-STEMI, or unstable angina. Diagnosis was made on the basis of typical chest pain history, electrocardiographic

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Corresponding Author: Dr. A Sankar, Department of General Medicine, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India. E-mail: shankardrkv@gmail.com

changes, and elevated levels of cardiac enzymes, creatinine kinase (CK), CK-MB, fasting serum TGs <150 mg%, and fasting serum cholesterol <180 mg% were included in the study. Patient already on treatment were excluded from the study. Fasting lipid profile was done to all patients and detailed history was obtained.

RESULTS

A total of 50 patients were included in this study, 23 were male and 27 were female. In our study, highest numbers of patients are in 41–50 years. 42% of patients in our study are overweight. 69% of male and 74% of female patients had high W–H ratio. 64% of patients had elevated serum triglyceride level. 58% of patients had low fasting HDL level. 23% of patients had diabetes and 46% of patients had hypertension. 68% of patients in high TGs had lower HDL level. 81% of patients in high W–H ratio had increased TGs level. 60% of overweight patients had increased TGs level. 85% of diabetic patients had increased triglyceride level [Tables 1-3].

DISCUSSION

Serial epidemiological studies in India suggest a rapid rise in the mean levels of total cholesterol, low-density lipoprotein cholesterol, non-HDL cholesterol, and TGs.^[6] In the ICMR-INDIAB study, a large proportion of people had at least one lipid abnormality; only 20% had all lipid parameters (total cholesterol, low-density lipoprotein cholesterol, TGs, and HDL cholesterol) within the normal range.^[7] The most commonly observed lipid abnormality was low HDL cholesterol; this was observed more often among those with lower levels of education. In Nordestgaard *et al.* study on non-fasting TGs and risk of myocardial infarction, ischemic heart disease and death in men and women showed that non-fasting triglyceride levels independently predict myocardial infarction, ischemic heart disease, and death.^[3] In Couillard *et al.* study on postprandial triglyceride response in visceral obesity showed that obesity and waist–hip ratio are associated with impaired postprandial TG clearance.^[8] In Kolovou *et al.* study on postprandial lipemia in hypertension suggested that patient with hypertension has an exaggerated response and delayed clearance of plasma triglyceride lipases concentration.^[4] The 2011 American Heart Association scientific statement on TG and cardiovascular disease (CVD) suggested the following new designations regarding the measurement of TG levels: (1) Screening for hypertriglyceridemia using non-fasting TG levels. Non-fasting levels >200 mg/dL require further follow-up with fasting TG levels; (2) optimal fasting TG levels, defined as <100 mg/dL, are a parameter of metabolic health; and (3) fasting samples are used to

Table 1: Age distribution

Age	Frequency (%)
<40	4 (8)
41–50	21 (42)
51–60	16 (32)
>60	9 (18)

Table 2: Cross tabulation of TG and HDL

TG	Normal HDL	Low HDL	Total	P value
Normal	11	7	18	0.040
High	10	22	32	
Total	21	29	50	

TGs: Triglycerides, HDL: High-density lipoproteins

Table 3: Cross tabulation of waist–hip ratio and TG

W–H ratio	Normal PP4 TG	High PP4 TG	Total	P value
Normal	10	4	14	<0.0001
High	7	29	36	
Total	17	33	50	

TGs: Triglycerides

designate borderline high (150–199 mg/dL), high (200–499 mg/dL), and very high (>500 mg/dL) TG levels. The use of non-fasting TG levels stems from their proposed superiority as predictors of incident CVD compared with fasting TGs.^[3,9]

CONCLUSION

There is an association between hypertriglyceridemia in ischemic heart disease patients. There is increase in relative risk when the patients have comorbid of diabetes, increased waist–hip ratio and obesity. Risk atherosclerosis is high in patients with hypertriglyceridemia. Hence, assessing TGs are important in ischemic heart diseases.

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