

Clinical profile and conventional risk factors of hypertriglyceridemic adult cohort.

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Abstract

Background: Dyslipidemia is one of the major risk factor for atherosclerotic cardiovascular disease. The role of increased low density lipoprotein has been widely studied and accepted culprit. Hypertriglyceridemia has also been seen as one of common dyslipidemia and important risk factors for atherosclerotic vascular disease and other disease like pancreatitis. This study aimed to see the baseline clinical profile and associated conventional risk factors among hypertriglyceridemic persons.

Materials & Methods: A descriptive cross-sectional study conducted in Manmohan Memorial Community Hospital, Kathmandu Nepal from March 2019 to September 2019. Subjects with hypertriglyceridemia were evaluated, history was taken, and they were examined and routine investigations were obtained.

Results: Out of 87 participants 67.8% were male. Mean age was 45.87 ± 12.48 years. Mean body mass index was 26.02 ± 3.27 kg/m². Mean Triglyceride was 275.11 ± 195.42 mg/dl. Hypertension, diabetes, smoking and alcohol consumption was present in 39.08%, 34.48%, 25.29% and 29.89% respectively Fatty liver was present in 36.78%. Hypertriglyceridemia showed positive correlation with smoking ($P < 0.01$), diabetes ($P = 0.04$) and presence of fatty liver ($P = 0.01$).

Conclusion: Hypertriglyceridemia was more common in male and was also prevalent in young age. Several comorbidities were associated with it. Timely detection of hypertriglyceridemia and associated comorbidities will be rewarding for better outcome.

Key Words: Dyslipidemia, Hypertriglyceridemia, Triglyceride

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I. Introduction:

Hypertriglyceridemia is one of the commonly encountered lipid abnormalities in the medical world. It is heterogeneous in its pathogenesis and classically occurs due to increased production of very low-density lipoprotein (VLDL) or decreased VLDL clearance or more commonly due to both processes.¹ Third National Health and Nutrition Examination Survey (NHANES) found the prevalence of hypertriglyceridemia in United State (US) adults aged 20 years and older in approximately 35% men and 25% women.² Increased Triglyceride (TG) is one of the component of metabolic syndrome.³ It is widely considered as one of risk factor for ischemic heart disease, insulin resistance, pancreatitis and stroke.^{4,5,6} Studies have shown serum TG level significantly higher in patients with acute coronary syndrome.^{7,8}

Hypertriglyceridemia can be asymptomatic and may be detected only by lipid screening, so studies have recommended TG level should be part of lipid screening.⁹ This study aimed to look for the basic clinical profile and associated common risk factors of hypertriglyceridemic participants which will help to understand them better and contribute in their management in future.

II. Materials And Methods:

This was a descriptive cross sectional study conducted in Manmohan Memorial Community Hospital, Kathmandu Nepal from March 2019 to September 2019. A total of 87 adult participants of age 18 years and above with hypertriglyceridemia defined according to National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) as TG of 150 mg/dl or more done after overnight fasting were enrolled according to simple random sampling. Informed consent was obtained from all the participants prior to enrolment. Only newly diagnosed dyslipidemic were included. Those who had history of hypertriglyceridemia, taking lipid lowering medications were excluded. Similarly pregnant and with known glomerulonephritis were excluded. Those who didn't opt for consent were excluded.

Hypertriglyceridemia were sub categorized borderline high if TG ranged from 150-199 mg/dl, high if TG ranged from 200-499 mg/dl and very high if triglycerides ≥ 500 mg/dl. All the participant who had

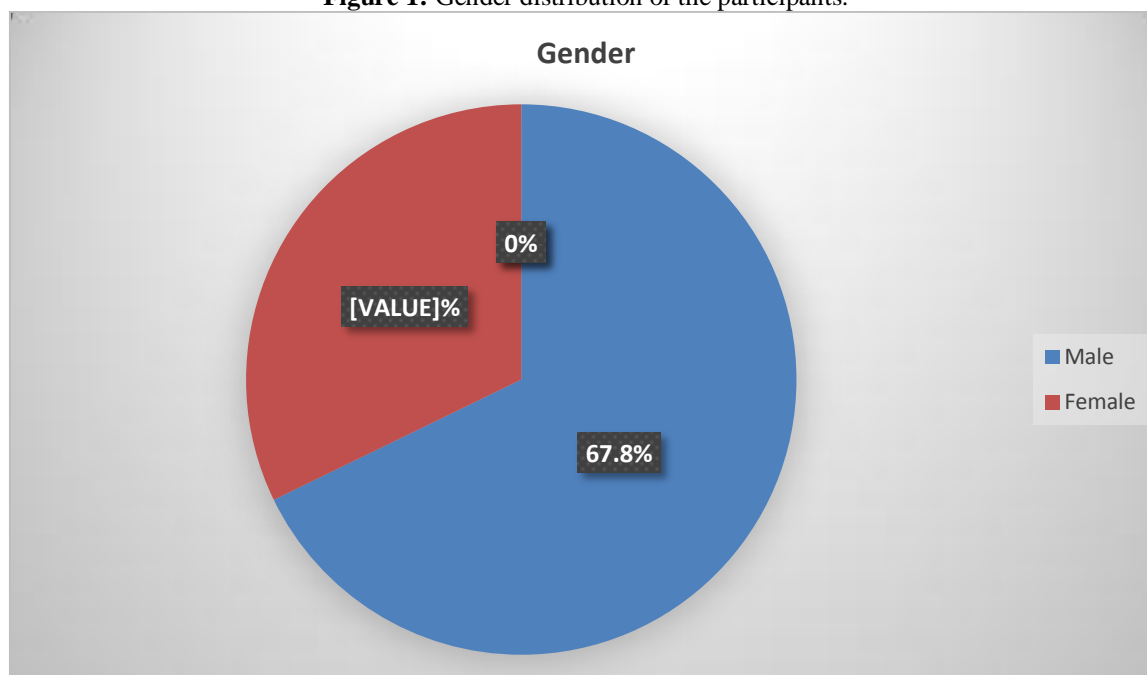
hypertriglyceridemia were examined for relevant clinical findings. Both known diabetic and newly diagnosed diabetics were included. Similarly both known hypertensive and those who was found to have increased blood pressure (BP) of $\geq 140/90$ mmHg confirmed by 2 readings taken 5 minutes apart were included. Height and weight were measured. Routine blood test including blood sugar fasting, post prandial (PP), glycosylated hemoglobin A1C (HbA1C), thyroid function test were done. Ultrasound (USG)abdomen were done to see fatty change in liver.

Data entry and analysis was done in statistical package for the social sciences (SPSS) version 20. Frequency and percentage were calculated for all the variables. Linear regression analysis was done to see the correlation of categorization of hypertriglyceridemia with hypertension (HTN), diabetes (DM), smoking, alcohol, body mass index (BMI), presence and absence of hypothyroidism and fatty liver. P value were calculated and value less than 0.05 was considered statistically significant.

III. Results

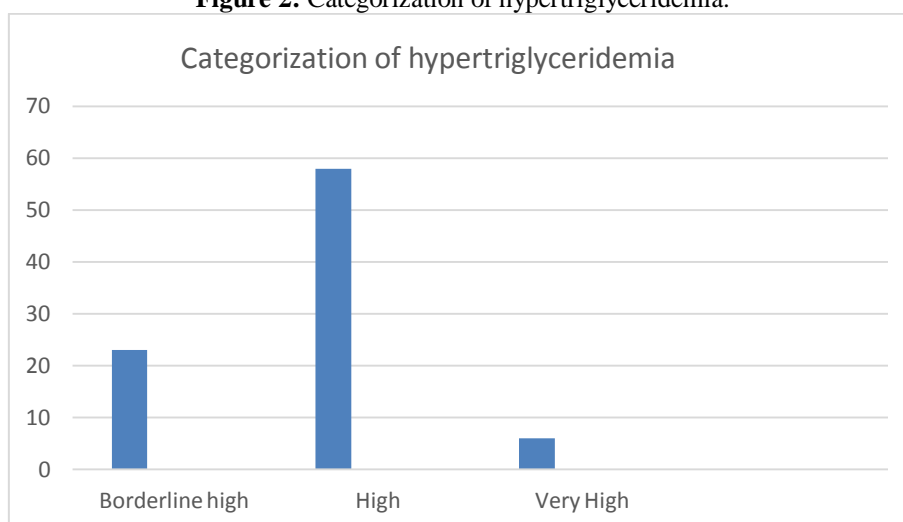
Out of 87 participants,59(67.8%) were male and 28 (32.2%) were female which is shown in figure 1.

Figure 1: Gender distribution of the participants.



Age of participants ranged from 18 to 87 years, mean being 45.87 ± 12.48 years. Mean height weight and BMI were 1.63 ± 0.80 m, $69.63 \pm kg$ and 26.02 ± 3.27 kg/m^2 respectively. Serum TG ranged from 150-1200 mg/dl and mean TG was 275.11 ± 195.42 mg/dl. A total of 23 (26.44%) had borderline high TG, 58 (66.67%) had high TG and 6 (6.90%) had very high TG which is shown in figure 2.

Figure 2: Categorization of hypertriglyceridemia.



The frequency and percentage of hypertension, diabetes, alcohol consumption, smoking, hypothyroidism and presence of fatty liver in USG abdomen is shown in table 1.

Table 1: Baseline Characteristics of enrolled participants.

Characteristics		Percentage
HTN	34	39.08%
DM	30	34.48%
Alcohol	26	29.89%
Smoking	22	25.29%
Hypothyroidism	16	18.40%
Fatty liver in USG	32	36.78%

Linear regression analysis revealed positive correlation of TG categorization with smoking ($P<0.01$), diabetes ($P=0.04$) and presence of fatty liver in USG ($P=0.01$). There was no significant correlation of other variables tested. The P values of correlation of TG categorization with variables tested is shown in table 2.

Table 2: The P values of correlation of TG categorization with tested variables.

Variables	P value
Age	0.22
Sex	0.43
HTN	0.38
DM	0.04
Alcohol	0.11
Smoking	<0.01
Hypothyroidism	0.31
Fatty liver in USG	0.01

IV. Discussion

In the present study, 67.8% of participants were male and the mean age was 45.87 ± 12.48 years. In a study by Vipperla K et al, among patients with hypertriglyceridemia and pancreatitis most were young-middle aged with mean age of 44 ± 12.7 years and 70% of them were male.¹⁰ Ijaz A et al found strong association between increased levels of triglycerides and coronary heart disease in younger patients.⁸ The BMI of participants of hypertriglyceridemia was 26.024 ± 3.27 kg/m² in this study indicating mean at overweight range. In a study in Norway BMI was 29.2 ± 4.0 kg/m² in a patients with severe hypertriglyceridemia, which was also in overweight range.¹¹

In this study mean TG was 275.11 ± 195.42 mg/dl. A total 26.44% had borderline high TG, 66.67% had high TG and 6.90% had very high TG. The information is clinically helpful because subjects with moderate hypertriglyceridemia can have increased risk of coronary heart disease and subjects with severe hypertriglyceridemia are at increased risk of pancreatitis. Similarly in the present study hypertension was present in 39.08% and diabetes in 34.48%, indicating hypertriglyceridemic can have other concomitant risk factors of cardiovascular disease. This study found positive correlation of TG categorization with smoking ($P<0.01$), diabetes ($P=0.04$) and presence of fatty liver in USG ($P=0.01$). Helvaci et al have shown smoking an important cause of hypertriglyceridemia.¹² Studies have shown increased TG a major lipid abnormalities in

DM and advocate for its adequate management.¹³ In another study Osono and colleagues have emphasized the importance of hypertriglyceridemia in the genesis of fatty liver.¹⁴ Our findings on hypertriglyceridemic participants were thus comparable to the published literatures.

V. Conclusions

Hypertriglyceridemia was more common in male and was prevalent even in young age. There was several other comorbidities associated with hypertriglyceridemia like diabetes, hypertension and smoking. Timely detection of hypertriglyceridemia and associated comorbidities is recommended as it will help in preventing many disease including coronary artery disease, stroke and pancreatitis.

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