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General Medicine

DYSLIPIDEMIA IN TERTIARY CARE HOSPITAL, SOUTHERN RAJASTHAN

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ABSTRACT Dyslipidemia is a major health problem in india and an important modifiable cardiovascular disease (CVD) risk factor. This study aimed to describe the prevalence of dyslipidemia among adults in southern rajasthan. A cross-sectional analyses done on 100 healthy volunteers aged >18 years visiting GMCH. Blood samples were collected to determine TC, TG, LDL-C, HDL-C, VLDL-C levels. Dyslipidemia was observed either alone or in combination. The most common dyslipidemia was low HDL-C in 42% in subjects. Which is independant risk factor for CAD. Thus, dyslipidemia should be identified early, promtoly and treated.

KEYWORDS : Dyslipidemia, CVD, HDL-C

INTRODUCTION:

Dyslipidaemia is a result of abnormalities in the plasma lipids. These abnormalities may due to elevated total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG) and reduced high-density lipoprotein cholesterol (HDL-C) levels, occurring alone or in combinations [1]. The burden of dyslipidaemia is gigentic in terms of morbidity, mortality and medical costs [2]. Dyslipidaemia is a well-known major modifiable risk factor for IHD, as elevated levels of TG, TC, LDL-C and low levels of HDL-C are documented risk factors for atherogenesis [3]. Increased prevalence of dyslipidaemia was detected also among adolescents and young adults which lead to increasing the prevalence of CAD later on life [4]. It is reported that a cholesterol level determined at age 22 predicts the higher rate of CAD development over 30 to 40 years. Moreover, nearly half of young adults with high TC have 5 times the risk of CAD and 9 times the risk of MI (myocardial infarction) in comparison with those having low TC levels over the following 30 to 40 years[5]. Primary dyslipidemia is due to genetic defect in metabolism of lipoproteins and secondary dyslipidemia is due to underlying cause which influences circulating levels of lipids. Lipid triad- high triglyceride, low HDL-C, high LDL-C is the most common established risk factor for cardio vascular disease. Risk increases when accompanied by diabetes and hypertension.

Dyslipidemia is defined by National Cholesterol Education Programme as (NCEP) follows:
TG ≥ 150mg/dl
TC ≥ 200mg/dl
LDL-C ≥130 mg/dl
HDL-C <40 mg/dl[6,7].
HDL-C levels are independent, strong inverse predictor of coronary heart diseases and acts as a anti atherogenic and the mechanism by which HDL-C protects CAD is removal of cholesterol from peripheral tissues to liver and excretion in bile[8].

AIMS AND OBJECTIVES:

1. To determine the lipid profile of healthy volunteers.
2. To determine the pattern of dyslipidemia of healthy volunteers.

MATERIALS AND METHODS:

The study was conducted 100 healthy volunteers visiting GMCH, Udaipur, Rajasthan.
Inclusion criteria:
1. >18 years of age healthy volunteer
2. Not any known acute or chronic illness

METHOD OF DATA COLLECTION:

50 male and 50 female adult healthy volunteers visiting at GMCH, Udaipur were taken after taking their consent. Their fasting venous blood sample was withdrawn and analysed for lipid profile. TC, TG, HDL-C, LDL-C and VLDL-C was measured by spectrophotometry on Roche Cobas 6000.

STUDY DESIGN: Cross-sectional observational study.

OBSERVATIONS:

TABLE 1

Lipids (mg/dL)	Sex				P value
	Male(n=50)		Female(n=50)		
	Mean±SD	Range	Mean±SD	Range	
TC	158.4±53.49	78-296	160.5±50.24	78-264	0.887
TG	107.8±43.78	46-217	112.6±41.66	43-217	0.693
LDL-C	104.9±38.94	50-233	99.96±36.49	39-184	0.646
HDL-C	38.04±9.352	16-56	41.02±8.192	29-61	0.237
VLDL-C	23.8±11.49	8-45	25.58±11.54	8-45	0.587

Table 1 shows, mean TC level was 158.4 ±53.49mg/dL ranging from 78 to 296mg/dL in males and was 160.5±50.24mg/dL ranging from 78 to 264mg/dL in females, mean TG level was 107.8±43.78mg/dL ranging from 46 to 217mg/dL in males and was 112.6±41.66mg/dL ranging from 43 to 217mg/dL in females, mean LDL-C level was 104.9±38.94mg/dL ranging from 50 to 233mg/dL in males and was 99.96±36.49mg/dL ranging from 39 to 184mg/dL in females, mean HDL-C level was 38.04±9.352mg/dL ranging from 16 to 56mg/dL in males and was 41.02±8.192mg/dL ranging from 29 to 61mg/dL in females, mean VLDL-C level was 23.8±11.49mg/dL ranging from 8 to 45mg/dL in males and was 25.58±11.54mg/dL ranging from 8 to 45mg/dL in females .

TABLE 2

Lipids(mg/dL)	Sex					
	Male (n=50)		Female (n=50)		Total (n=100)	
↑= High,↓=Low	No.	%	No.	%	No.	%
↑TC (>200)	6	12.00%	12	24.00%	18	18.00%
↑TG (>150)	10	20.00%	10	20.00%	20	20.00%
↑LDL-C (>130)	8	16.00%	8	16.00%	16	16.00%
↓HDL-C (<40)	28	56.00%	14	28.00%	42	42.00%
↑VLDL-C(≥30)	10	20.00%	10	20.00%	20	20.00%

FIGURE 1

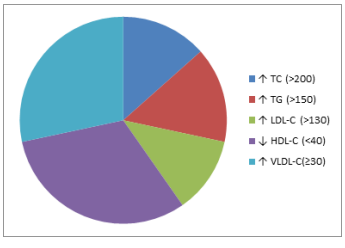

Table 2 and figure 1 shows, ↑TC was seen in 12% males and 24% females, ↑TG in 20% males and 20% females, ↑LDL-C in 16%

males and 16% females, ↓HDL-C in 56% males and 28% females and ↑VLDL-C in 36% males and 40% females.

DISCUSSION:

100 volunteers visited GMCH, Udaipur were analysed for dyslipidemia. We observed 42 adults had dyslipidemia either alone or in combination. The most common dyslipidemia was low HDL-C in 42% out of which 56% were male and 28% were female. HDL-C has an important role in prevention of CAD[9]. HDL-C is a complex of Apo-A lipoproteins that has anti-oxidative, anti-proliferative, antithrombotic and anti-inflammatory properties[10,11]. It has been reported that low HDL-C combined with high TG could dramatically increase the risk of CAD[12]. The study-UK progression of diabetes suggested that 0.1 mmol increase in HDL-C would reduce CAD by 15%[13].

Populations in northern russia, shows similar low HDL-C levels in both women and men[14].Jiang et al[15] observed that prevalence of low HDL-C(40 mg/dL) was 19.2% in the general adult population (35 to 74 years of age) in China. They observed a mere difference in HDL-C levels in men and women. Aguilar-Salinas et[16] al showed that most common lipid abnormality was a low HDL-C 46.2% in males, 28.7% in females and 36% for both genders in Mexico.

Our study showed males had low HDL-C as compared to females although statistically insignificant. Similar studies in north america, western europe and australia showed females had higher HDL-C levels than males. Different populations display different magnitudes in these sex differences[17].

Our study shows, ↑TG in 20%, ↑TC in 18%, ↑LDL-C in 16%, ↑VLDL-C in 20% subjects. Similar with previous study in Mexico[18].Sawant et al noted that the high prevalence of ↑TC, ↑TG and ↓HDL-C is of concern. It was observed that in comparison with western population, a lower level of cholesterol appears to predispose Indians to CAD[19]. Also a hospital based study in Chennai, around 75% of patients with myocardial infarction had TC levels <200mg/dl indicating that the threshold for the TC levels above which it posses a risk for CAD is low in Indians[20] .The crude prevalence of ↑TG differs between the age groups and it was higher in men than in women. The contributing factor for ↑TG in our population could be our diet rich in carbohydrates[21]. ↑TG levels have been associated with increased levels of LDL-C which are considered to be highly atherogenic[22].

Ella et al[23] observed adolescents had prevalence of ↑TC 6%, ↑TG7.5% , ↑LDL-C 8.2% and ↓ HDL-C 9.4%. Our results are higher: this may due to the older age group, more modernisation and accumulation of risk factors. WHO stepwise non-communicable diseases surveillance 2011-12 reported adults aged from 15 to 65 years old have prevalence of ↑TC and ↑TG was 36.7% and 10.2%[24].

CONCLUSION

- Study concluded that southern rajasthan popution has dyslipidemia without any known risk factor.
- Most frequent dyslipidemia was low HDL-C.
- High TG and High TC also a risk factor of CAD.
- Dyslipidemias may attributed to diatery habits, smoking, obesity, sedentary life style or associated to any metabolic disease.

A limitation of our study is its cross-sectional design, which cannot establish causality.

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