PATTERN OF DYSLIPDEMIA AMONG RURAL POPULATION OF RAHIM YAR KHAN PAKISTAN

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Abstract:

Background: Dyslipidemia is one of the modifiable risk factors of coronary heart disease.

Objective: To determine the pattern of dyslipidemia among rural population.

Methodology: This was a cross sectional study conducted in rural area of Rahim Yar Khan as a part of large study regarding prevalence of coronary heart disease. A total of 2000 study subjects were included by systematic random sampling technique, from 22 clusters of subdistricts, Rahim Yar khan, Pakistan. Patients excluded from study were; on statin therapy, patients with hypothyroidism, diabetes mellitus. Informed verbal consent was taken form each patient. Fasting venous blood samples was taken for serum total cholesterol level, serum triglycerides level, low density lipoprotein (LDL) and high-density lipoprotein (HDL). Lipid profile was considered deranged if any one of the followings was present: Total Cholesterol level >200mg/dl, Triglyceride (TG) level >150mg/dl, High density lipoprotein (HDL) <40mg/dl in males and <50 mg/dl in females and Low-density lipoprotein (LDL) >130 mg/dl. Data was entered and analyzed using computer program SPSS version 16.0.

Results: A total of 2000 study subjects were included in this study, with male 792(39.6%) and females 1208 (60.4%). Mean age of study subjects was 46±9.6 years. Overall 843 (42%) study subjects have deranged lipids, with 26 (1.3%) having high LDLc, 45 (2.2%) having high cholesterol, 375 (18.8%) having high triglycerides and 538 (27%) low HDLc.

Conclusion: This study showed that there was high frequency of deranged lipids among general population of rural background. Most common component among deranged lipids were low HDLc, followed by high triglycerides, high cholesterol and high LDLc.

Key Words: *Dyslipidemia, Rural population, Prevalence*

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INTRODUCTION:

Acute coronary syndrome (ACS) includes unstable angina, non–ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI).[1] Patients with UA/NSTEMI are usually treated, where facilities are avaialble, with an early invasive strategy involving cardiac catheterization and prompt revascularization of myocardium at risk. Clinical outcomes can be optimized by revascularization coupled with aggressive medical therapy that includes anti-ischemic, antiplatelet, anticoagulant, and lipid-lowering drugs.[1] Acute coronary syndrome (ACS) is one of the major causes of morbidity and mortality globally.[2] More people die annually from CVDs than from any other cause and it is estimated that 17.5 million people died from CVDs in 2012, almost one third of all global deaths. Of these deaths, half were due to coronary heart disease and half due to stroke. Over three quarters of CVD deaths take place in low- and middle-income countries.[3] The INTERHEART study reported that the risk factors of MI include: dyslipidemia, smoking, HTN, psychosocial stress, DM, increased waist-hip ratio, physical inactivity and poor diet, all being modifiable.[4] Dyslipidemia usually occur among children and adults, without signs or symptoms. Timely diagnosis and treatment of lipoprotein disorders can reduce cardiovascular morbidity and mortality.[5] Disorders in lipid metabolism (dyslipidemia) can result in premature atherosclerosis, leading to the development of cardiovascular disease.[6] Evidence shows that currently there is an epidemic of cardiovascular disease in South asia and Pakistan being part of this region is not an exception.[7]

Increase in total and low-density lipoprotein cholesterol (LDL-C) levels are associated with an increased risk.[8] Couple of recent studies reported conflicting findings, one study showed no significant change in serum total lipid and total cholesterol (TC) levels.[9] This study was conducted to determine the pattern of dyslipidemia amog rural patients.

METHODOLOGY:

This was a cross sectional study conducted in rural area of Rahim Yar Khan as a part of large study regarding prevalence of coronary heart disease. A total of 2000 study subjects were included by systematic random sampling technique, from 22 clusters of subdistricts, Rahim Yar khan, Pakistan. Exclusion criteria: Patients on statin therapy, having hypothyroidism and diabetes mellitus. The data was collected on a preforma having variables on; age, sex and address was recorded. Variables on lipid included; serum total cholesterol level, serum triglycerides level, low density lipoprotein (LDL) and high-density lipoprotein (HDL). Informed verbal consent was taken from each patient. Ethical approval from Institutional Review Board was taken. Fasting venous blood samples were taken from each patient. Lipid profile was considered deranged if any one of the followings was present: Total Cholesterol level >200mg/dl, Triglyceride (TG) level >150mg/dl, High density lipoprotein (HDL) <40mg/dl in males and <50 mg/dl in females and Low-density lipoprotein (LDL) >130 mg/dl.

Data was entered and analyzed using computer program SPSS version 16.0. Descriptive statistics was applied to calculate mean and standard deviation for the age of the patients. Frequencies and percentages were calculated for categorical variables such as gender and deranged lipids like increased cholesterol, triglyceride and low-density lipoprotein levels and decreased high density lipoprotein level.

RESULTS:

A total of 2000 study subjects were included in this study, with male 792(39.6%) and females 1208 (60.4%). Mean age of study subjects was 46±9.6 years.

Table I: Prevalence of deranged lipids among study subjects

Variable	Deranged	Normal
Deranged lipid profile	843 (42.2%)	1157(57.8%)
High LDLc	26 (1.3)	1974 (98.7)
High cholesterol	45(2.2%)	1955(97.8%)
High Triglyceride	375 (18.8%)	1625(81.2%)
Low HDLc	538(26.9%)	1462(73.1%)

Table I shows that overall 843 (42%) study subjects have deranged lipids, with 26 (1.3%) having high LDLc, 45 (2.2%) having high cholesterol, 375 (18.8%) having high triglycerides and 538 (27%) low HDLc.

Table II: Deranged lipids categorized according to sex

Variable	Deranged Lipids		Normal Level		P Value
	Male	Female	Male	Female	
Deranged lipids	350(41.5%)	493(58.5%)	442(38.2%)	715(61.8%)	0.1
High LDLC	9(34.6%)	17(65.4%)	783(39.7%)	1191(60.3%)	0.6
High Cholesterol	21(46.7%)	24(53.3%)	771(39.4)	1184(60.6%)	0.3
High Triglycerides	175(46.7%)	200(53.3%)	617(38%)	1008(62%)	0.00
Low HDLC	202(37.5%)	336(62.5%)	590(40.4%)	872(59.6%)	0.25

Table II shows that among overall deranged lipids subjects 350 (41.5%) were male versus 442 (38%) among normal subjects (p=0.1), among subjects with high LDLc 9 (34%) were male versus 783 (39.7%) among normal subjects (p=0.6), among subjects with High Cholesterol 21 (46.7%) were male versus 771 (39.4%) among subjects with normal cholesterol (p=0.3), among subjects with High Triglycerides 175 (46.7%) were male versus 617(38%%) among subjects with normal triglycerides (p=0.00) whereas, among subjects with low HDLc 202 (37%) were male versus 590 (40%) among subjects with Normal HDLc (p=0.25).

DISCUSSION:

Dyslipidemia is one of the risk factors for cardiovascular diseases, having potential of being modifiable to interventions.[9,7] Disorders in lipid metabolism (dyslipidemia) can lead to atherosclerosis based cardiovascular diseases. Our study showed that 843 (42%) subjects have deranged lipids, these findings reflect current burden of an established risk factor of CHD. The INTERHEART study suggested a range of risk factors that lead to coronary heart disease, with dyslipidemia among others as an important risk factor.[5]

A study conducted in Shenzhen on almost same sample size like current study, showed the values of TC 14%, TG 16%, low HDL-C 9%, and high LDL-C as 12.13 % of the 1,995 participants, respectively.[10] The prevalence of dyslipidemia was 34.64 %. Current study has found more prevalence (42%) of dyslipidemia as compared to that study (34%). Similarly, comparably high TG level, low HDL level was also more in current study. However, high LDLc was In contrast, findings of current study were much below to a previous study, which showed hypercholesterolemia, hypertriglyceridemia and low high density lipoprotein (HDL) was present in 23.3%, 63.0% and 54.6% in the total study population respectively.[11]

Among overall deranged lipids subjects 350 (41.5%) were male versus 442 (38%) among normal subjects (p=0.1), among subjects with High Triglycerides 175

(46.7%) were male versus 617 (38%) among subjects with normal triglycerides (p=0.00). Studies suggested that as far as dyslipidemia is concerned females were particularly affected.[12,13] Our study showed that among high TG subjects female were more as compared to male in deranged lipid category. (p=0.00) Similarly, a previous study although in diabetic population also showed the predominance of dyslipidemia at an older age, the increased prevalence and higher lipid abnormalities in the female diabetics indicate that female diabetics are at a higher risk of atherosclerosis and subsequently coronary artery disease compared to male diabetics.[14]

CONCLUSION:

This study showed that there was high frequency of deranged lipids among general population of rural background. Most common component among deranged lipids were low HDLc, followed by high triglycerides, high cholesterol and high LDLc.

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