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Research Article

A SCREENING STRATEGY OF LIPID PROFILE IN YOUNG PATIENTS

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ABSTRACT

Introduction: Certain patterns of blood lipids including elevated total cholesterol (TC), elevated low-density lipoprotein cholesterol (LDL), and low levels of high-density lipoprotein (HDL) cholesterol are important risk factors for coronary heart disease (CHD). Because of the important health impact of CHD and the role of lipid disorders in its development, routine universal or targeted screening for lipid disorders has been advocated.

Material and methods: The present study was conducted randomly in 50 young adult patients less than 40 years of age in Department of medicine at a 300 bedded hospital. 5ml sample was taken; centrifuged and complete lipid profile was done. Total cholesterol was measured by the CHOD-PAP method, Triglycerides were measured by the GPO-Trinder method, HDL-cholesterol measured by the Phosphotungstic acid method. The values of LDL and very-low-density lipoprotein cholesterol (VLDL) were be calculated using Friedewald's equation

Results: Among 50 screened patients, thirty five were males and 15 were females. The range of serum Cholesterol was from 69 mg/dl to 209 mg/dl with a mean of 130.02 \pm 41.80. The range of VLDL Cholesterol was from 14 mg/dl – 93 mg/dl with a mean of 54.36 \pm 17.35. The value of LDL Cholesterol ranged from 29 mg/dl to 120 mg/dl with a mean of 81.24 \pm 20.83. HDL Cholesterol ranged from 26 mg/dl- 98 mg/dl with a mean of 53.76 \pm 21.27. The range of Triglyceride was from 66 mg/dl-246 mg/dl with a mean of 132.72 \pm 48.06. Total lipids ranged from 390 mg/dl to 720 mg/dl with a mean of 550.28 \pm 70.27.

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INTRODUCTION

Cholesterol levels tend to follow a typical pattern during childhood and adolescence. Data from the Bogalusa Heart Study suggests that the low serum lipid levels noted during the first 2 years of life increase rapidly; lipid levels approach adult range by 2 to 3 years of age but are not necessarily stable. [1] Lipid levels remain fairly stable during childhood, and then decrease somewhat during early puberty. [2, 3, 4] Adolescent boys and girls both appear to experience decreases in LDL cholesterol, whereas boys also have a decrease in HDL cholesterol. [2]

In adults, mean Serum cholesterol increases with age for both men and women. [5] In men, mean T Serum cholesterol increases steadily from early adulthood to middle age and then reaches a plateau, falling only in men older than age 75 years. Mean TC is initially lower in premenopausal women than in men, but it rises at a similar rate. After menopause, however, women experience an additional 10 to 20 mg/dl rise, and their

mean Serum cholesterol remains higher than for men throughout the remainder of life. HDL cholesterol levels do not change greatly throughout adulthood. [6] Mean Serum cholesterol and the proportion with levels greater than 240 mg/dl at any age are similar for those identifying themselves as white or African American. [7]

Certain patterns of blood lipids including elevated total cholesterol, elevated low-density lipoprotein cholesterol (LDL), and low levels of high-density lipoprotein (HDL) cholesterol are important risk factors for coronary heart disease (CHD). [8, 9, 10] CHD is the leading cause of morbidity and mortality in the United States, causing nearly 500,000 deaths each year and requiring nearly 12 million hospital days of care per year. It is the leading cause of disabled life-years and is second only to injuries as a cause of life-years lost. [11]

Lipid disorders are common in the United States and other Western, developed countries. Data from the National Center for Health Statistics collected from 1988 to 1994 show that

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17.5% of US men and 20% of US women 20 to 74 years of age had Serum cholesterol levels greater than 240 mg/dl. The mean Serum cholesterol was 202 mg/dl for men and 204 mg/dl for women. [12]

Approximately 6% of US men have Serum cholesterol less than 200 mg/dl and HDL cholesterol less than 35 mg/dl; 5% have Serum cholesterol of 200 to 239 mg/dl and an HDL less than 35 mg/dl. [7]

Because of the important health impact of CHD and the role of lipid disorders in its development, routine universal or targeted screening for lipid disorders has been advocated. [10]

Data from the Behavioral Risk Factor Surveillance Survey show that measurement of serum cholesterol has become a common practice: 74% of adults report that they have had their cholesterol level measured, and 66% report that they have done so within the past year. The likelihood of having had one's cholesterol measured within 5 years increases with age: 40% of adults aged 18 to 24 years have been checked, compared with 66% of those 35 to 44 years and 87% of those 65 years and older. Overall, 29% of adults report that their providers have told them that they have elevated cholesterol levels. [12]

MATERIAL AND METHODS

The present study was conducted randomly in Adult Patients less than 40 years of age of both sexes without any evidence of stroke TIA, without any family history of hyperlipidemia, chronic liver disease; chronic renal disease and hypothyroidism. The study was done on 50 patients admitted in Department of medicine at District Hospital Rajouri, a 300 bedded hospital in J&K

The subjects were registered after informed consent and eligibility criteria were ascertained. A detailed medical history was obtained from each subject including quantitative information about important risk factors. Routine workup of the subjects was done in hospital wards.

In all patients, 12 -14 hours fasting peripheral venous blood sample (5ml) was taken. Serum was separated by centrifugation for 15 minutes. Commercially available kits were used for estimation of lipid profile.

The lipid estimation was done as per the following methods

1. Serum cholesterol was measured by the CHOD-PAP method,[13]
 2. Triglycerides were measured by the GPO-Trinder method,[14]
 3. HDL-cholesterol measured by the Phosphotungstic acid method,[15]
 4. The values of LDL and very-low-density lipoprotein cholesterol (VLDL) can be calculated using Friedewald's equation[16] as follows:
 - $LDL\text{-Cholesterol} = \text{total cholesterol} - (\text{HDL-cholesterol} + \text{triglycerides}/5)$
 - $VLDL\text{-C} = \text{Triglycerides}/5$.
- All results were presented as mean ± standard deviation (SD).

RESULTS

Table no 1 Gender wise distribution of patients

Gender	Patients
Males	35(70%)
Females	15(30%)
Total	50

Out of total of 50 patients who got admitted at our institute in a given specific period, thirty five of them were males and 15 were females. So males constituted 70 percent and females were just 30 percent of all admission.

Table no 2 Age wise distribution of patients

Age group	Patients	
	Males	Females
16-20 yrs	1(2%)	0
21-25 yrs	2(4%)	1(2%)
26-30 yrs	13(26%)	6(12%)
31-35 yrs	12(24%)	1(2%)
36-40 years	7(14%)	7(14%)
Total	35(70%)	15(30%)

The age group of the patients admitted at our institute for the study ranged from 16 yrs to 40 years of age. We had maximum number of female patients in the age range of 36 to 40 years, which were 7 patients out of 15 patients and constitutes overall 14% of all patients. The males admitted predominantly belonged to 26 to 30 years of age which constituted 26 %.

Table no 3 Lipid profile of patients

	Range in (mg/dl)	Mean+/- SD
Serum cholesterol (mg/dl)	69-209 (mg/dl)	130.02 +/- 41.80
VLDL cholesterol (mg/dl)	14-93 (mg/dl)	54.36 +/- 17.35
LDL cholesterol (mg/dl)	29-120 (mg/dl)	81.24 +/- 20.83
HDL cholesterol (mg/dl)	26-98 (mg/dl)	53.76 +/- 21.27
Triglycerides (mg/dl)	66-246 (mg/dl)	132.72 +/- 48.06
Total lipids (mg/dl)	390-720 (mg/dl)	550.28 +/- 70.27

In our study group of 50 patients who were screened for lipid profile. The range of serum Cholesterol was from 69 mg/dl to 209 mg/dl with a mean of 130.02+/- 41.80. The range of VLDL Cholesterol was from 14 mg/dl – 93 mg/dl with a mean of 54.36+/- 17.35. The value of LDL Cholesterol ranged from 29 mg/dl to 120 mg/dl with a mean of 81.24+/-20.83. HDL Cholesterol ranged from 26 mg/dl- 98 mg/dl with a mean of 53.76+/-21.27. The range of Triglyceride was from 66 mg/dl- 246 mg/dl with a mean of 132.72+/-48.06. Total lipids ranged from 390 mg/dl to 720 mg/dl with a mean of 550.28 +/-70.27. National Health and Nutrition Examination Survey (NHANES III) suggests that for men ages 25 to 34, the probability of finding a Total Cholesterol greater than 240 mg/dl is 5%; only 0.6% had Total Cholesterol greater than 280 mg/dl. In men 45 to 54 years old, 27% had Total Cholesterol greater than 240 mg/dl and 6% greater than 280 mg/dl. Where as in our study the highest value noted of cholesterol was 209 mg/dl only with mean of 130.02+/-41.80.

In women 25 to 34 years old, 5% have a probability of having Total Cholesterol greater than 240 mg/dl and 0.35% greater than 280 mg/dl. In women 45 to 54 years old, 28% have a

probability of having Total Cholesterol greater than 240 mg/dl and 7% greater than 280 mg/dl. [5]

DISCUSSION

The decision about who should be screened and treated for lipid disorders in the absence of known Coronary Heart Disease remains somewhat controversial, especially for those adults and children at low short-term risk of CHD events. The second edition of the Guide to Clinical Preventive Services from the US Preventive Services Task Force (USPSTF) gave a "B" recommendation to "periodic" screening for high TC in men 35 to 65 years of age and women 45 to 65 years of age. [17]

The National Cholesterol Education Program Adult Treatment Panel II (NCEP) guidelines recommended screening all adults 20 years of age and older with serum TC and with serum HDL if accurate results are available every 5 years. [10]

The American College of Physicians found "periodic" screening for men 35 to 65 years of age and women 45 to 65 3 years of age to be "appropriate" but not mandatory. Screening young men and women was recommended only where the history or physical exam suggested a familial disorder or there were at least 2 other CHD risk factors.[20,21] The Canadian Task Force on Preventive Health Care in 1994 recommended "case-finding" in all men ages 30 to 59 years who present to their health care providers and clinical judgment in other cases.[22] The American Diabetes Association recommends screening all adult diabetics yearly with TC, LDL, HDL, and triglycerides.[23] The NCEP Report of the Expert Panel on Blood Cholesterol Levels in Children and Adolescents[24] and the American Academy of Pediatrics Committee on Nutrition Policy Statement on Cholesterol in Children[25] recommended 2 approaches: (1) a low-fat diet in all healthy children over the age of 2 years and adolescents, equivalent to the American Heart Association Step One diet; and (2) selective screening (based on family history of elevated cholesterol or premature CHD) and treatment of children who are at highest risk for the development of accelerated atherosclerosis in early adult life.

It is actually not known whether screening for lipid disorders among asymptomatic persons leads to improvement in CHD mortality or morbidity. What is to be known is

1. Whether pharmacological therapy of patients (similar to those who would be identified by screening) without known CHD but with "abnormal" lipid levels improve outcomes compared with no treatment?
2. Will treatment with diet or exercise therapy of patients (similar to those who would be identified by screening) without known CHD but with "abnormal" lipid levels improve outcomes compared with no treatment?
3. Is there a reliable, accurate, acceptable, and feasible screening test (or tests) that can be used to detect lipid disorders? If so, who should be screened, and how often should screening be performed?

CONCLUSION

The underlying goal of screening for lipid disorders is to reduce the burden of illness from dyslipidemia. The most important reason for screening is to identify patients with a lipid disorder who will benefit from treatment, whether such treatment is

pharmacologic therapy or more intensive diet and exercise therapy (ie, more than the general population recommendations of a healthy diet low in saturated fat diet and moderate physical activity). Some of the interventions considered here, such as dietary advice or exercise therapy, may also have beneficial effects on CHD or other health problems that are mediated through means other than the modification of lipid disorders. The available screening tests appear to identify reliably abnormal lipid levels across the spectrums of age, gender, ethnicity, and risk for coronary heart disease (CHD).

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