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A PILOT STUDY: ASYMPTOMATIC HYPERLIPOPROTEINEMIAS IN UNDERGRADUATE UNIVERSITY STUDENTS

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ABSTRACT:

Young adults may suffer hyperlipoproteinemias, which may be asymptomatic. This pilot study was conducted to screen out hyperproteinemias in undergraduate university students. 30 asymptomatic students were randomly selected and preliminary examined: serum cholesterol, triglycerides, LDL and HDL were determined, 10.35% of the students had high cholesterol and triglycerides levels. It is an important finding offering a mass screening program in our undergraduate university students.

INTRODUCTION

Some primary hyperlipoproteinemias resulting from single gene mutations, viz. familial dysbetalipoproteinemia, hypercholesterolemia and hypertriglyceridemia and a few hyperlipoproteinemias of unknown origin, viz. polygenic hypercholesterolemia, sporadic hypertriglyceridemia and familial hyperalphalipoproteinemia, are those disorers which may present in young adults (Brown M.S. & Goldstein J.L. 1990). They may be presented by clinical findings like xanthornes, pancreatitis, atherosclerosis or may present asymptomatically, especially in young adults (Bono D.P. & de, Boon N.A. 1991). This study was done to determine asymptomatic hyperlipoproteinemias in undergraduate university students.

MATERIALS AND METHODS

30 students were randomly selected from the same level of a graduate degree. Criteria of inclusion was:

- Absence of any physical deformity or clinical signs of a disease.
- Psychological well being without mental retardation.
- Absence of any type of xanthomas or obesity or hypertension.
- Without use of any pharmacotherapy with established effects on lipid or protein of the body, since two weeks.
- Absence of any addition of any type of abused substance.
- Living in Karachi since two years, without absence for more than two months.

Initial evaluation was done after 7 hours of fasting, each volunteer was weighed, and blood pressure checked. About 5 ml blood was collected from a prominent cubital vein, by a disposable syringes using 3.8% sodium citrate as anticoagulant.

The samples were centrifuged at 3500 rpm for about 5 minutes immediately. Plasma was separated and frozen. The analysis of important parameters was done within 72 hours by standard reagent kits, provided by Merck and boenringer Mannheim, on vitalab eclipse automatic analyzer.

RESULTS AND DISCUSSION

Table 1 shows volunteer characteristics. Being a pilot study only 30 volunteers are included who fulfilled the diagnostic criteria.

Table 1
Volunteer Characteristics

Total No. of volunteers	30 (15 males and 15 females)
No. of volunteers dropped	1 (male)
Age 20-23 years	
Marital status	Unmarried
Weight: Average Range	 Male: 63.71 kg, Female: 49.73 kg Male: 54-76 Kg, Female: 37-65 kg

Table 2 represents a comparison of important parameters from students, from corresponding age group. The mean levels of all the parameters were in limits.

Table 2
Comparison of important parameters from standards,
for the corresponding age group

No.	Profile	Standard Mg %	Determined levels Mg %
1.	Cholesterol	< 200 mg / 100 ml	160.84 ± 4.37 (29)[+]
2.	Triglycerides	< 200 mg / 100 ml	98.07 ± 4.50 (29)
3.	LDL	< 150 mg / 100 ml	67.81 ± 2.08 (29)
4.	HDL Male Female	 35-70 35-75	 40.92 ± 2.01 (29) 43.86 ± 2.77 (29)

+ Means ± S.E.M. (no. of volunteers)

Table 3 shows distribution of different signs from clinical diagnosis of hyperlipoproteinemia. No volunteer showed any of these clinical signs. This shows asymptomatic nature of all volunteers.

Table 3
Distribution of different signs of the diagnosis of hyperlipoproteinemia in volunteers

No.	Presentation	Distribution
1.	Cutaneous xanthomas Xanthoma striataplamaris Tuberoeruptive xanthoma (knees & elbows)	 Nil Nil
2.	Obesity	Nil
3.	Hypertension	Nil
4.	Neurological deficit	Nil

Table 4 represents frequency of chemical hyperlipoproteinemia in volunteers. 10.35% of volunteers show high cholesterol levels, while 3.40% of them show relative change of cholesterol and triglycerides, approaching to each other.

Table 4
Frequency of chemical hyperlipoproteinemia in volunteers

No.	Profile	Distribution
1.	Hypercholesterolemia	03/29 (19.35%)
2.	Hypertriglyceridemia	00/29 (00.00%)
3.	High levels of LDL	00/29 (00.00%)
4.	High level of HDL	00/29(00.00%)
5.	Relative change of cholesterol and triglycerides	01/29 (03.45%)

In western society heart disease are the most common causes of death (Study Group 1987 and Assmann G. 1979). However, over the last decade, this mortality has begun to decline in United States of America, Australia and very recently this decline has also been noted in United Kingdom, but it is not yet clear whether this reflects changing of life styles, improved diagnosis and management or other factors as yet unrecognized.Perhaps diverse factors like personal income, expanded public assistance programs and vitamins and mineral enrichment of food may have reduced the prevalence of the classic nutritional deficiency diseases in the United States (Rudman D. 1980). However, this decline in mortality, due to cardiovascular causes, cannot be expected in a developing country like Pakistan as no improvement in the factors related to cardiovascular status of the public has been proceeded as yet.

Acquired heart diseases have two peculiarities. First, they are very commonly latent, i.e. they are noticed by the patients, when advanced. Secondly, the number of symptoms attributable to heart disease, are limited and is common for many different pathologies to present, through a final common symptomatic pathway (2). Although diagnosis of such pathologies at an initial stage is necessary but seems to be very difficult.

Asymptomatic hyperlipoproteinemias are very important in this regard, as they may lead to life threatening situation before diagnosis and producing symptoms.

A general diagnosis criteria may be established for screening of different lipoproteinemias, like familial dysbetalipoproteinemia, familial hypertriglyceriemia, multiple lipoprotein type hyperlipoproteinemia, primary lipoproteinemia of unknown etiology (polygenic hypercholesterolemia, sporadic hypertriglyceridemia and familial alphalipoproteinemia). The patient may fulfill at least one of the major and minor criteria.

Major Criteria

1) Hypercholesterolemia
2) Hypertriglyceridemia
3) Relative change in serum cholesterol and triglyceride levels, approaching to each other.

Minor Criteria

1) At puberty or early adulthood
2) Cutaneous xanthomas (one or more types)
3) Obesity
4) Hypertension
5) Neurological deficit
6) History of stroke or myocardial infarction (Modified from Principles of Internal Medicine, 1979).

In our study 13.80% volunteers are found to have asymptomatic hyperlipoproteinemia. This is an important finding offering a mass screening programme in undergraduate university students. This is important to mention that at this age, these hyperlipoproteinemia can be controlled by slight alteration in diet, before any life threatening disease in advancing age.

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