

FREQUENCY OF DYSLIPIDEMIA IN PAKISTANI SOLDIERS IN MULTAN GARRISON

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ABSTRACT

Objective: To determine the frequency of dyslipidemia in army soldiers in Multan garrison.

Study Design: Descriptive study.

Place and Duration of Study: Department of Medicine at Combined Military Hospital Multan from January 1998 to January 2000.

Subject and Methods: One thousand, otherwise healthy male soldiers, from various units in Multan Garrison were included in this study. Their fasting venous blood samples were obtained in sterile disposable syringe for lipid profile test. Those who were smokers or had history of diabetes mellitus, hypothyroidism or family history of early coronary heart disease (CHD) were excluded.

Results: Sixty eight (6.8%) soldiers were found to have dyslipidemia. Thirty (3%) had low HDL levels, 26 (2.6%) had increased serum triglyceride levels, 10 (1.0%) soldiers were found having isolated increase in LDL-cholesterol level with normal total serum cholesterol, and 2(0.2%) were having raised total and LDL cholesterol levels. Eighty four percent of studied population was not aware of the fact that dyslipidemia is a risk factor for heart disease.

Conclusion: Frequency of dyslipidemia in Pakistani soldiers is moderate and it can be further reduced by increasing the awareness of disease.

Keywords: dyslipidemia, hyperlipidemia, hypercholesterolemia, hypertriglyceridemia, LDL-cholesterol, HDL-cholesterol, coronary heart disease.

INTRODUCTION

Dyslipidemia, including high serum total cholesterol, LDL cholesterol and triglyceride levels and low HDL cholesterol levels, is an established risk factor of coronary heart disease [1, 2]. Most cases of dyslipidemia have a genetic bases, in some cases, in addition to genetic disorder(s), environmental factors such as diet, exercise and smoking habits also play important role in manifestation and progression of the disease. LDL cholesterol is atherogenic and it is associated with increased risk of atherosclerosis and its complications [3, 4] such as coronary heart disease and stroke. Small and dense LDL cholesterol particles are more atherogenic [5, 6] and have greater predictive value for cardiovascular disease risk as compared to its simple quantitative measurement [6]. LDL cholesterol level is elevated by a diet rich in saturated fats, smoking, sedentary life style, and increased visceral fat [7] the risk of coronary heart disease is decreased by lowering its level. The incidence of coronary

heart disease (CHD) rises steadily and exponentially with increasing serum cholesterol levels [8]. Cholesterol concentration also exhibits a positive relationship with coronary heart disease mortality [9].

HDL cholesterol is antiatherogenic, and it protects against the coronary heart disease [10, 11]. Low HDL-cholesterol increases the risk of cardiovascular disease [12]. HDL cholesterol levels are increased in individuals who exercise, where as obesity is associated with low HDL cholesterol and high serum triglyceride levels and increased cardiovascular disease risk [13]. Although correlation between serum cholesterol levels and atherosclerosis diminishes with advancing age, but the predictive value of cholesterol is restored when fractioned into its atherogenic LDL and protective HDL components [14]. High serum triglyceride levels are also associated with increased risk of coronary heart disease [15, 16].

Objective of the Study

This study was done to determine the frequency of dyslipidemia in army soldiers of Multan garrison.

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SUBJECTS AND METHODS

This descriptive study was carried out in the department of medicine, in collaboration with department of Pathology at Combined Military Hospital Multan, from January 1998 to January 2000. One thousand otherwise healthy soldiers in the age bracket of 20 to 55 years were selected at random from various Units located in Multan Garrison, and screened for dyslipidemia.

Inclusion Criteria:

Male soldiers between the ages of 20 to 55 years who were otherwise healthy were included

Exclusion Criteria

Smokers, diabetics, and those suffering from hypothyroidism or had family history of early CHD were excluded.

Methods

Peroforma was designed which included detailed particulars of the soldiers such as their height, weight, and blood pressure, inquiry about presence of various risk factors of CHD such as smoking, diabetes mellitus, hypertension, family history of CHD and dyslipidemia. Venous blood sample (3 ml) was collected in plane bottle after twelve hours fast, and serum obtained from clotted blood sample was utilized to determine serum cholesterol, high density lipoproteins,(HDL) low density lipoproteins (LDL) and triglyceride concentration. Rendox and lab system kit was used to conduct these tests. Soldiers having serum cholesterol levels above 200mg/dl (5.2mmol/l) ,serum triglyceride levels exceeding 200mg/dl (2.3mmol/l),serum LDL-cholesterol above 130 mg/dl and HDL-cholesterol below 35mg/dl were declared having dyslipidemia. They were also questioned about their awareness regarding dyslipidemia as a risk factor for heart disease.

RESULTS

One thousand otherwise healthy soldiers, in the age bracket 20-55 years, were included in the study. Average age was 29.1 years (SD12.1). The percentage of dyslipidemia in studied population was 6.8% (68 soldiers).

Thirty (3%) soldiers had low HDL level, but their LDL cholesterol/ HDL- cholesterol ratio was desirable (<3), and most of them were in the age bracket 40-55 years (Figure). Twenty six (2.6%) subjects had increased serum triglyceride levels, and most of these subjects belonged to age group 40-49 years (Figure). Ten (1%) soldiers were found having isolated increase in LDL- cholesterol level with normal total serum cholesterol, and 2 (0.2%) subjects were having raised total and LDL cholesterol levels. These soldiers were in the age bracket 20-49 years, (Figure). Eighty four (84%) of studied population was not aware of the fact that dyslipidemia is a risk factor for heart

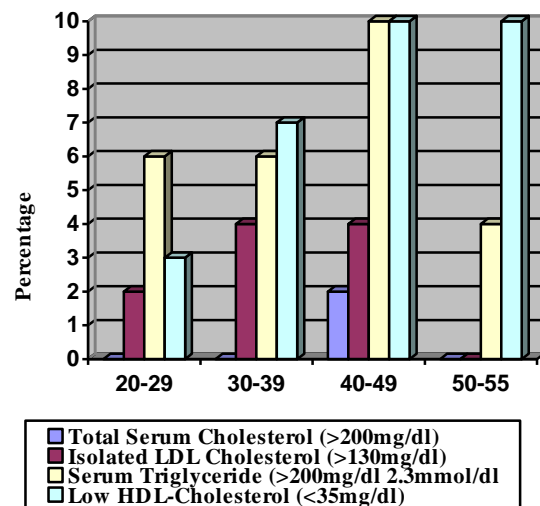


Figure: Age distribution of various fractions of dyslipidemia in soldiers in Multan garrison.

disease.

DISCUSSION

This study has revealed that frequency of dyslipidemia in Pakistani soldiers is 6.8%. It is low as compared to adult urban population of Pakistan, as 31% of otherwise healthy, civilians are suffering from dyslipidemia [17]. Tendency of less exercise and over weight in urban population may be responsible for this difference. Frequency of dyslipidemia in our soldiers is less than those of other countries. 45.2% of Lithuanian soldiers are suffering from dyslipidemia [18], similarly 36.9% of U.S. Navy soldiers are found to have hypercholesterolemia [19]. Frequency of

hypercholesterolemia and hypertriglyceridemia in Polish pilots was 72.4 and 17.1 percent respectively, high LDL-cholesterol and low HDL-cholesterol levels were found in 69.9 and 86.9 percent respectively [20], however, 52.2% of them were overweight. Difference in dietary habits and lifestyle behaviors between our and western soldiers may be important contributory factors for the difference in frequency of dyslipidemia. Prevalence of dyslipidemia in adult male population of western countries is significantly high as compared to our soldiers, i.e, investigation of PROCAM study have concluded that 41% of adult male population of Germans is experiencing diet-induced hypercholesterolemia and 18.7% suffer from hypercholesterolemia due to genetic anomalies [21]. Another study revealed that 30% Canadians had a total blood cholesterol level of 6.2mmol/l or greater [22]. The study of risk factors prevalence in the United Kingdom showed that 25% of study population had cholesterol levels exceeding 6.6mmol/l (250mg/dl), while 3% had cholesterol levels greater than 8mmol (309 mg/dl) [23], this frequency is much higher as compared to our study, regular exercise and balanced diet may be important factors for better lipid profile in our soldiers as compared to western civil population. This study has also revealed that frequency of low HDL-cholesterol in Pakistani soldiers is moderate. Low HDL-Cholesterol level is an important determinant of coronary risk, which rises in prevalence with increasing age [12]. More than 64% of all PROCAM study patients who experienced myocardial infarction had low HDL cholesterol levels i.e below 35mg/dl, at entry into the study [21]. Present study has limitation that sample comprised only male soldiers, who represent adult male fraction of total population, hence the results of this study can be applied only to male population of the country. This study has also highlighted that awareness of risk factors is poor among soldiers and needs attention.

CONCLUSION

Frequency of dyslipidemia in Pakistani soldiers is moderate and it can be further reduced by increasing the awareness of disease.

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