Bahrain Medical Bulletin, Volume 18, Number 3, September 1996

PLASMA LIPID PROFILE IN THE MALE POPULATION OF THE JORDANIAN ARMED FORCES

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Objective: Assess blood lipid and lipoprotein levels in the male population of the Jordanian Armed Forces.

Design: A prospective field study done from April to May 1995.

Setting: Royal Medical Services (Division of the Jordanian Armed Forces).

Subjects: 823 military male personnel serving in the United Nation peace keeping forces of different ranks, and social backgrounds.

Measures: Age, body mass index (BMI), lipid and lipoprotein levels using standardised methods of serum collection and laboratory examination.

Results: The mean age of the subjects was 26.810.6 ´ years (mean2 ´ SD). The 95 % confidence interval (CI) of the mean age was 26.4 - 27.1 years. The mean BMI was 24.47 ´ Kg/m2, (95th CI 24.1 - 24.6 Kg/m2). The mean serum cholesterol was 4.7 mmol/L (95 % CI 4.6 - 4.8 mmol/L), the 95th percentile was 6.8 mmol/L. Triglycerides mean was 3.0 mmol/L (95 % CI 2.9 - 3.1 mmol/L) with the 95th percentile of 6.0 mmol/L. LDL-C was measured for 806 subject with a mean of 2.9 mmol/L (95 % CI 2.8 - 3 mmol/L) the 95th percentile of 4.9 mmol/L. HDL-C mean was 1.24 mmol/L (95 % CI 1.22 - 1.26 mmol/L) with the 5th percentile of 0.7 mmol/L.

Conclusion: The blood lipid and lipoprotein profile of the male population of the Jordanian Armed Forces are comparatively high than those reported from Libya and were similar to those reported for the United States calling for changes in dietary habits, smoking, reducing weight, exercise and screening the asymptomatic adult.

Bahrain Med Bull 1996;18(3):

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There is a strong association between serum cholesterol level and ischaemic heart disease[1]. Expert panels have reinforced guidelines on lowering cholesterol as one of the fundamental preventive measures to reduce mortality from coronary heart disease[2]. The National Institutes of Health in the United States recommended screening the population at large[3], while experts in the United Kingdom have no national consensus on who should have their cholesterol checked[4]. The present study along with previous studies from Jordan[5] and Libya[6], aimed at examining the association between lipid and lipoprotein levels and age and body mass index.

METHODS

A prospective field study was performed on 823 men members of the Jordanian Armed Forces serving in the United Nation peace keeping force. Subjects were

randomly selected after obtaining informed consent to participate in the study after excluding those who failed the physical examination in addition to having medical problem ie. Diabetes, hypertension. Measurement of height and weight as well as taking blood specimen after 12-14 hour fasting, in a semi sitting position in resting state. Specimens were collected in plain tubes, and the serum separated by centrifugation (3000 x g, 10 min, 40 C) within 3 hours, liquidated into several tubes and stored at 40 C until they were analyzed.

Analytical Procedures

Plasma cholesterol and triglyceride were measured enzymatically using Hitachi 704 automated analyzer with respective enzymatic Kits (bioMerieux and Human). High density lipoprotein cholesterol (HDL-C) was determined by measuring cholesterol in the supernatant liquid after precipitation of the serum with Magnesium Chloride (MgCl2) and phosphotungstic acid (bioMerieux). Low density lipoprotein cholesterol (LDL-C) was calculated according to Friedewald et al equation[7].

RESULTS

The mean age of the subjects in this study group was 26.810.6 ´ years (mean2 ´ SD). The 95 % confidence interval (CI) of the mean age was 26.4 - 27.1 years. The mean Body Mass Index (BMI) was 24.47 ´ kg/m2 (95 % CI 24.1 - 24.6 kg/m2).

Table 1 shows the mean levels and the 5th and 95th percentile of plasma lipids and lipoproteins in male population of the Jordanian armed forces.

Table 1
The mean levels and the 5th and 95th percentile of plasma lipids and lipoproteins in male population of the Jordanian Armed Forces

Measure	Mean (´SD mmol/L)	5th percentile	95th percentile
Cholesterol mmol/L	4.76.8	2.6	1.0 ´
Triglyceride mmol/L	3.06.0	2.3	1.5 ´
LDL-C mmol/L	2.94.9	0.9	1.0 ´
HDL-C mmol/L	1.21.8	0.7	0.3 ´
BMI kg/m2	0.60.8	0.4	0.1 ´

BMI - Body Mass Index
SD - Standard Deviation

The mean serum cholesterol was 4.7 mmol/L (95 % CI 4.6 - 4.8 mmol/L) with a 95th percentile of 6.8 mmol/L. Triglycerides mean was 3.0 mmol/L (95 % CI 2.9 - 3.1 mmol/L) with the 95th percentile of 6.0 mmol/L.

LDL-C was measured for 806 subjects with a mean of 2.9 mmol/L (95 % CI 2.8 - 3 mmol/L) the 95th percentile of 4.9 mmol/L. HDL-C mean was 1.24 mmol/L (95 % CI 1.22 - 1.26 mmol/L) with the 5th percentile of 0.7 mmol/L.

DISCUSSION

Most prospective studies examined the risk factors for coronary artery disease (CAD) on middle aged men with little emphasis on participant less than 40 years of age[8]. Children and adolescents with elevated serum cholesterol have both

aortic and coronary atherosclerotic evidence at post mortem examination[9]. Our study showed that the mean cholesterol level 4.7 mmol/L in the age group examined was comparable to other studies from Jordan for the same age group (4.650.99 ´ mmol/L10) and in the United States for the age group between 20-30 years (mean was 4.5 mmol/L)[13], although higher than the mean cholesterol of 4.0 mmol/L in a Libyan population aged 30-40 years[6].

Many studies showed an inverse relationship between serum HDL-C and CAD11 and a level of HDL-C < 0.9 mmol/L is considered as a major risk factor for CAD, and that it should be measured in the initial assessment[12]. Our mean serum of HDL-C 1.2 mmol/L as similar to a Libyan population of 1.39 mmol/L in the age 30-40 years[6]. The total cholesterol/HDL-C ratio (atherogenic index) were 3.9, 2.9 respectively.

The distribution of serum cholesterol followed a normal distribution curve, with 31 % of subjects had a level above 5.7 mmol/L, 4.6 % were above 6.5 mmol/L (28 men). The fact that the serum cholesterol and triglycerides levels in this study were 4-15 % higher than the Libyan population but similar to other Jordanian and United States studies, may be explained by our dietary habits of eating more animal fat and dairy products, as well as the fact that dietary advice in our community is not widely followed.

CONCLUSION

The blood lipid and lipoprotein profile of the male population of the Jordanian Armed Forces are comparatively higher than those reported for Libya and were similar to those reported for the United States, calling for changes in dietary habits, smoking, reducing body weight, exercise and screening the asymptomatic adult.

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