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LIPIDS AND CHOLESTEROL - RISK FACTORS TO A POLICE UNIT FROM BRASOV

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Abstract: *The cholesterol is a major risk factor for ischemic cardiopathy; hypercolesterolemy to the policemen from Braşov reached 36,1% in 2010. Lipids and cholesterol are major risk factors for coronary heart disease [2,3]. There are three forms of lipids: cholesterol, triglycerides and phospholipids, cholesterol and triglycerides having a major role in the process of atherosclerosis and ischemic heart disease.*

Key words: *Lipids, Cholesterol, Ischemic heart disease.*

1. Introduction

93% of cholesterol is located in cells; the remaining 7% is circulating in plasma. About 75% of total plasma cholesterol is found in the fraction LDL-cholesterol (LDL-C) and about 20-25% in the fraction HDL-cholesterol (HDL-C). Because LDL is the major plasma lipoprotein of cholesterol, hypercholesterolemia mainly indicates increased LDL-C, rarely can be accomplished by increasing HDL-C. Normal values of total cholesterol are recorded up to 200 mg/dl. 60-70% of plasma cholesterol is transported in the LDL fraction, measuring the total cholesterol was accepted as a substitute for plasma LDL-C [5, 6].

Large epidemiological studies (Framingham, Seven Country, Multiple Risk Factor Intervention Trial) showed a positive correlation between total plasma cholesterol and morbidity, respectively mortality from ischemic heart disease, to both men and women, but the risk is lower to women [7,8]. Cardiovascular risk is significant to total cholesterol levels over 250mg%. There is no limit between normal and increased levels, because coronary risk increases gradually even at lower cholesterol values of 200 mg% on the one hand, and on the other hand, the role of cholesterol is modified by the presence of other risk factors (high blood pressure, smoking etc.) which can be associated to hypercholesterolemia [9].

The role of serum cholesterol as a risk factor has been proven by the interventions of primary and secondary prevention for ischemic heart disease that aimed lowering the cholesterol levels. Thus, a 10% reduction in cholesterol values determines an average reduction of risk of ischemic events by 20% [1]. A decresing in cholesterol by 20-25mg% would contribute to a risk reduction of coronary heart disease by 54% at age of 40 years, by 39% at 50 years and 27% at 60 years. Also, a decrease of cholesterol by dietary, pharmacological, surgical (ileal bypass)

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means would delay the progression of coronary lesions and would even cause a regression to some of them. Cholesterol level is determined by genetic and nutritional factors, the last playing a moderate role [4,10]. However, it is recommended that cholesterol intake to be lower than 300 mg/day in relation with the presence of other risk factors for atherosclerosis.

In 2006, in the medical clinical trials in Romania, the cases of dyslipidemia were the most common situations encountered by physicians in everyday clinical practice.

In 2007, in Romania, dyslipidemia was present in 46% of the population, in various forms: total cholesterolemia (24%), LDL above 130 mg/dl or above 100 mg/dl to diabetics (24%), TGL above 150 mg/dl to 23% of the population, the percentages were higher in Moldova and Oltenia.

Currently, in Romania, over a third of the population is affected by hypercholesterolemia and this number is growing.

Dyslipidemia is an important public health problem to developed countries by the increased prevalence, throught consequences (clinical or subclinical), the costs involved in caring for these patients.

2. Objectives

1. Applications of cholesterol measurement methods and medical evaluation to a community with special features, the employers of Brasov Police Inspectorate.
2. The usage of descriptive epidemiological methods to get the answer to the questions: To *whom?* And *When?*.
3. The description of cholesterol values distribution in the study population according to personal characteristics (sex, age, position held).
4. The measurement risks factors including hypercholesterolemia involved in major diseases causing morbidity to the studied population.
5. Identification based on the results obtained from measurement and epidemiological analysis of health status of the people exposed to the risk of disease.

3. Materials and Methods

According to the methodology established by the Medical Director of MAI, the active staff is medically supervised from the time of enrollment by periodical medical exams, their frequency beeing specific to each age group.

Periodical medical examination is accompanied by gathering information and determining total cholesterol, measurement of blood pressure values, measuring weight and height, etc.

For the determination of threshold limit of total cholesterolemia to distinguish normal persons from those with hypercholesterolemia was used the recommended value of the third report of the National Cholesterol Educatio - U.S.A. (NCEP, Adult Treatment Panel III – ATP III), a total cholesterolemia <200mg/dl is a normal value while a value equal to or greater than 200mg/dl shows a hypercholesterolemia.

4. Results and discussions

Total cholesterolemia was determined to 596 of the 614 people examined in 2010.

Distribution of total cholesterol values has the following characteristics: the minimum value recorded: 96mg%, maximum value: 384mg%, modal value: 180mg% and the average cholesterolemia: 187.4 mg% (± 43.4mg%).

Hypercholesterolemia (values equal to or greater than 200 mg%) was recorded in 36.1% of all determinations (figure 1).

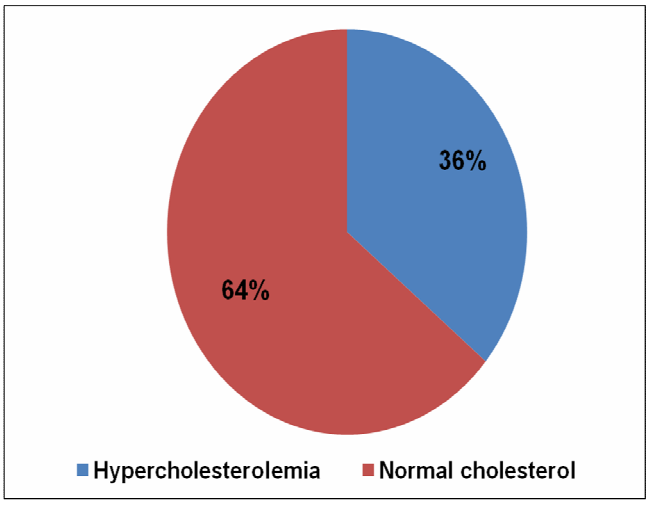

Fig. 1. *The structure of the studied group based on the total serum cholesterol*

37.5% of the 536 determinations made to men and 23.3% of those made to women registered values ≥ 200 mg% (table 1)

Gender distribution of values of the total cholesterol Table 1

Sex	Total Cholesterol levels (mg/dl)		Total
	< 200	≥ 200	
Men	335	201	536
	→ 62.5%	→ 37.5 %	
	↓ 87.9 %	↓ 93.5 %	
Women	46	14	60
	→ 76.7 %	→ 23.3 %	
	↓ 12.1 %	↓ 6.5 %	
Total	381 (63.9 %)	215(36.1 %)	596

Of the total number of people with hypercholesterolemia, 42.3% are aged between 30 and 39 years, 16.7% between 45-49 years and in the same proportion of 13.5% aged 25-29 and 40 - 44 years (figure 2).

Worrying is that the highest percentage of hypercholesterolemia occurs to young people between 30-39 years old, to whom it must be addressed prevention programs for coronary and ischemic heart disease.

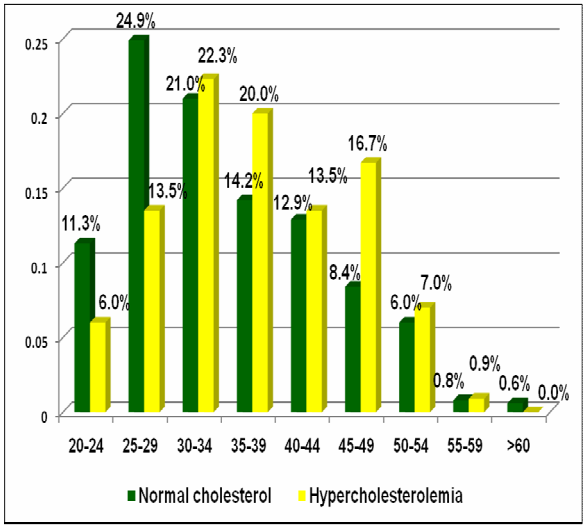

Fig. 2. *Distribution of total cholesterol values (mg/dl) by age group*

Distribution of cholesterol values correlated with the "job position" (figure 3) is characterized by the following:

• 55.3% of all people with hypercholesterolemia are police officers, agents and principal agents of police officers (14.9%, 34.4%, 6.0%), 21% inspectors (0.5%, 5, 6%, 14.9%) are under commissioners (7.9%) and commissioners (7.4%);

• 69.6% of the total number of commissioners, 62.5% of the total number of high commissioners and 53.3% of the chief inspectors had total cholesterol values ≥ 200 mg%.

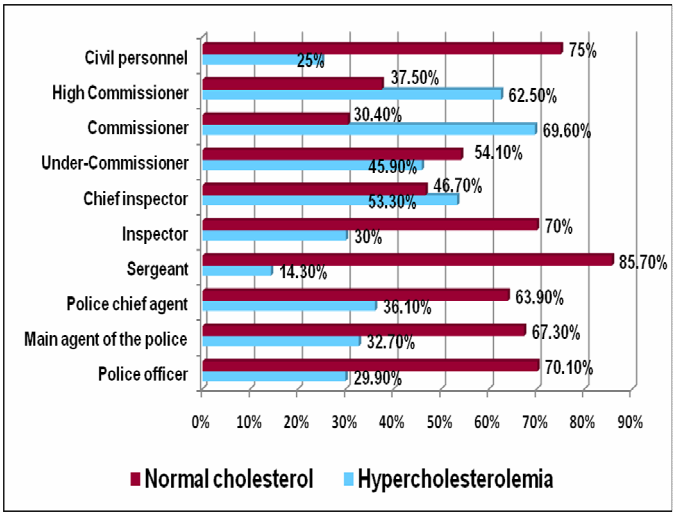

Fig. 3. *Distribution of total serum cholesterol values (mg/dl) according to the feature "job position"*

The study is important because it allows the establishment of the individual preventive strategy of the model, thus the individual can make programs that can include primary and secondary prevention measures.

At a population strategy group, programs can be made to combine multifactorial epidemiological model with that of the stages of life, an approach that allows the development of specific preventive services by age group.

The establishment of specific preventive service packages avoids the appearance of risk factors, the distribution of risk factors and early detection of disease to prevent complications, leading to a large gain for the individual, family and society.

Group age files can be made that include: more frequent affections, the distribution pattern of risk factors and the preventive services set. These will be the subject of another study.

5. Conclusions

Total cholesterol was determined to 596 of 614 people examined.

- the modal value of cholesterol is 180mg%;
- average value of cholesterol is 187.4 mg% (± 43.4mg%);
- hypercholesterolemia (values equal to or greater than 200 mg%) was recorded at 36.1%;
- 37.5% of the 536 determinations recorded to men, respectively 23.3% to women showed values ≥ 200 mg%;
- 42.3% are aged between 30 and 39 years, 16.7% between 45-49 years and in the same proportion of 13.5%, ages 25-29 and 40-44 years;
- 55.3% of all people with hypercholesterolemia are police officers, agents and principal agents of police officers (14.9%, 34.4%, 6.0%);
- 21% inspectors (0.5%, 5.6%, 14.9%) are under commissioners (7.9%) and commissioners (7.4%);
- 69.6% of the total number of commissioners, 62.5% of the total number of high commissioners and 53.3% of the chief inspectors had total cholesterol values ≥ 200 mg% (Table 2).

Distribution of total serum cholesterol values Table 2

Job Position	Normal cholesterol	Hyper cholesterolemia
Police officer	70.10%	29.90%
Main agent of the police	67.30%	32.70%
Police chief agent	63.90%	36.10%
Sergeant	85.70%	14.30%
Inspector	70%	30%
Chief inspector	46.70%	53.30%
Under-Commissioner	54.10%	45.90%
Commissioner	30.40%	69.60%
High Commissioner	37.50%	62.50%
Civil personnel	75%	25%

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