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CHOLESTEROL LEVELS: INFLUENCE IN CORONARY ARTERY DISEASE

NÍVEIS DE COLESTEROL: INFLUÊNCIA NA DOENÇA ARTERIAL CORONARIANA

NIVELES DE COLESTEROL: INFLUENCIA EN LA ENFERMEDAD ARTERIAL CORONARIA

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ABSTRACT

Objective: to evaluate the cholesterol levels in patients with coronary artery disease (CAD) and to verify the relation of dyslipidemia with CAD. **Method:** cross-sectional and descriptive study whose sample consisted of 78 charts of patients with CAD. Data collection took place in June and July 2008, using a form. This study was approved by the ethics and research committee under protocol n°. 292/05. **Results:** were observed predominantly the following results: male (62.9%), elders (68%), basic education (32%), non-white (52.6%). In relation to cholesterol levels, 37.1% of patients had total cholesterol > 200 mg / dl, 82% HDL < 40 mg / dl and 5.2% LDL > 160mg/dl. **Conclusion:** thus, we detected low levels of HDL in patients with CAD, which provides the elements to assume an increased cardiovascular risk related to low HDL. However, it is necessary to conduct further studies to analyze and test this proposition. **Descriptors:** nursing, coronary disease, cholesterol, dyslipidemias.

RESUMO

Objetivos: avaliar os níveis de colesterol em pacientes portadores de doença arterial coronariana (DAC) e verificar a relação da dislipidemia com a DAC. **Método:** estudo descritivo e transversal. A amostra foi constituída por 78 prontuários de pacientes que apresentaram os seguintes critérios de inclusão: ter diagnóstico médico de doença arterial coronariana, a qual poderia ser identificada nos prontuários por DAC, insuficiência coronariana, síndrome coronariana aguda, angina e infarto; ter realizado exame de lipidograma na admissão hospitalar. A coleta de dados aconteceu em junho e julho de 2008, mediante um formulário para preenchimento dos dados de identificação do paciente e dados relacionados à DAC e aos exames de lipidograma. Para a análise, os dados foram transcritos e tabulados em uma planilha do programa Excel do Windows XP Professional, e posteriormente foram organizados em tabelas e analisados com a estatística descritiva. Estudo com o projeto de pesquisa aprovado pelo Comitê de Ética e Pesquisa da instituição sob protocolo n° 292/05. **Resultados:** nos resultados foram observados os seguintes predomínios: sexo masculino (62,9%), idosos (68%), ensino fundamental (32%), cor não-branca (52,6%). Em relação aos níveis de colesterol, 37,1% dos pacientes possuíam colesterol total > 200 mg/dl, 82% HDL < 40mg/dl e 5,2% LDL ≥ 160mg/dl. **Conclusão:** assim, foram detectados baixos índices de HDL nos pacientes com DAC o que fornece elementos para supor um maior risco cardiovascular relacionado ao HDL baixo. Contudo, é necessária a realização de outros estudos para analisar e testar essa proposição. **Descritores:** enfermagem; doença das coronárias; colesterol; e dislipidemias.

RESUMEN

Objetivo: evaluar los niveles de colesterol en pacientes portadores de enfermedad arterial coronaria (EAC) y verificar la relación de la dislipidemia con la EAC. **Método:** estudio transversal y descriptivo cuya muestra fue compuesta por 78 fichas de pacientes con EAC. La colecta de datos se realizó en junio y julio de 2008, mediante un formulario. Estudio aprobado por el comité de ética en investigación de la institución con n° de protocolo 292/05. **Resultados:** en los resultados fueron observados los siguientes predomínios: sexo masculino (62,9%), ancianos (68%), enseñanza fundamental (32%), color no-blanco (52,6%). En relación a los niveles de colesterol, 37,1% de los pacientes tenían colesterol total > 200 mg/dl, 82% HDL < 40mg/dl e 5,2% LDL ≥ 160mg/dl. **Conclusión:** así, fueron detectados bajos índices de HDL en los pacientes con EAC lo que proporciona elementos para suponer un mayor riesgo cardiovascular relacionado al HDL bajo. Sin embargo, es necesario realizar de otros estudios para analizar y testar esta proposición. **Descriptores:** enfermería, enfermedad coronaria, colesterol, dislipidemias.

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INTRODUCTION

Coronary artery disease (CAD) involves several clinical evidence resulting from the changes in cholesterol levels as angina pectoris, myocardial infarction, stroke and peripheral vascular disease. These diseases are responsible for more deaths of adults in the world, responding in Brazil for 300,000 deaths yearly.¹

DAC is a multifactorial disease; its prevention is related to the identification and control of risk factors.² In the Framingham study was demonstrated the importance of risk factors for developing heart disease and stroke, which were identified as factors CAD risk hypertension, diabetes mellitus, dyslipidemia (increased levels of LDL and low levels of HDL), obesity, alcohol intake, age, smoking, sedentary lifestyle and family history of early atherosclerosis.³

Dyslipidemia deserves special attention, as well as being controllable, influences on the emergence of coronary heart disease and may act directly or indirectly associated with other risk factors.

Dyslipidemia are changes in the concentrations of serum lipids such as total cholesterol, low density lipoprotein (LDL) and triglycerides, as well as reduction of high density lipoprotein (HDL), which are responsible for different functions of the organism such as hormones and production of energy, and vitamin absorption. However, the increase in the rates of serum lipids, especially LDL, can lead to the development of atherosclerosis. It is noteworthy that the HDL cholesterol is considered to be cardioprotective, because it prevents the progression of heart disease, whereas LDL is incorporated into atherosclerotic plaques that develop in the arterial wall is considered as bad cholesterol.⁴

Epidemiological studies with adults show that there is an association between high levels of total cholesterol and LDL with the incidence of coronary heart disease in any age.⁵ Increased rates of serum lipids, especially LDL, leads to the picture of atherosclerosis, disease most often affects the coronary arteries. The lipid profile begins in childhood and occurs silently, with an atherosclerotic lesion diagnosed only at the adult age.⁶

The process of atherosclerosis is the buildup of plaque in the fat layer of tunic vessels, gradually narrowing the lumen of the same, this pathological process leads to

difficulty and / or interruption of the supply of blood flow caused by the deposition of lipids.²

Therefore, when addressing a gradual process that atherosclerosis begins in early childhood and progresses into adulthood, there are demographic, socioeconomic and epidemiological over time that allowed the occurrence of transition patterns nutritional.⁷

Recommendations for treatment of dyslipidemia are in the IV Brazilian Guidelines on Dyslipidemias and Guideline for the Prevention of Atherosclerosis², which include: classification of dyslipidemias of lipidemias laboratorial evaluation, risk stratification and lipid treatment targets for atherosclerosis, change in lifestyle, drug treatment for dyslipidemia and dyslipidemia in special groups.

It is worth noting that these recommendations are relevant to the well being of patients with dyslipidemia, and such recommendations are not followed in a systemic cost-effectiveness, particularly important in Brazil, where the socioeconomic situation complicates the tracking of orientations.⁸

Given these recommendations, you need the performance of the multidisciplinary team of health, especially the nurse, as nursing care favors the identification of health problems reported by patients and detection of risk factors for CAD. Thus, nurses can develop a plan of care for patients according to their needs and meeting the recommendations of the Brazilian Guidelines on Dyslipidemias and Guideline for the Prevention of Atherosclerosis.²

Nursing consultation to the dyslipidemic patient care, nurses require the use of their time, knowledge, expertise and planning to improve the quality of care and obtain satisfactory results in the maintenance and / or recovery of the health of the patient.⁹ So the study is relevant due to the investigation of dyslipidemia in patients with coronary artery disease.

OBJECTIVES

- ♦ To evaluate the cholesterol levels in patients with coronary artery disease.
- ♦ To investigate the relationship of dyslipidemia with coronary artery disease.

METHOD

This is a descriptive study, document and quantitative approach. It was developed in a

public tertiary hospital, covenant with the Unified Health System (SUS), located in Fortaleza. The choice of this location was to be a referral of high complexity in the care of heart and lung diseases.

The sample consisted of 78 medical records of patients presenting the following inclusion criteria: having a diagnosis of coronary artery disease, which could be identified in the records by CAD, coronary artery disease, acute coronary syndrome, angina and heart attack, having been submitted to lipid profile on admission.

Data collection was conducted between June and July 2008, with consultation of the records, which were selected by simple sampling, identifying and avoiding potential discrimination of patients. A form was used to fill the patient's identification data and data related to CAD and lipid profile tests.

For analysis, data were transcribed and tabulated in an Excel spreadsheet of *Windows XP Professional*, and later were organized in tables and analyzed using descriptive

statistics.

The division of ages followed the classification of young adults 20-39 years old and 40 to 59 years and older, less than 60 years. Schooling was stratified on years of study, ranging from zero to illiterate than 16 years of study, ie, the illiterate college graduates. And the values of lipids were classified according to the Brazilian Guidelines on Dyslipidemias and Guideline for the Prevention of Atherosclerosis.

The project followed the recommendations of Resolution 196/96 of the National Health Council, it was forwarded to the Ethics and Research of the institution, which issued an opinion favorable to their development, under protocol n. 292/05.

RESULTS

First shows the characterization data collected from patients of their records and then the lipid profile, according to the values of total cholesterol, low density lipoprotein (LDL) and high density lipoprotein (HDL).

Tabela 1. Distribution of the sample in accordance with the sociodemographic characteristics. Fortaleza - CE, 2008.

Gender	N	%	Medium $\pm$ DP
Male	49	62,9	
Female	29	37,1	
Total	78	100	
Age			
20 a 39 years old	1	1,3	
40 a 59 years old	24	30,7	64,21 $\pm$ 8,9
$\geq$ 60	53	68,0	
Total	78	100	
Education			
Analphabet	19	24,3	
< 8 years	25	32,0	
8 a 13 years	15	19,3	
14 a 16 years	14	18,0	
> 16 years	5	6,4	
Total	78	100	
Color			
White	37	47,4	
Non-White	41	52,6	
Total	78	100	
Religion			
Catholic	64	82,0	
Evangelic	13	16,7	
Yehova Witnesses	1	1,3	
Total	78	100	
Marital Status			
Married/Stable Union	59	75,7	
Single/ Widower/Divorsed	19	24,3	
Total	78	100	

It was observed the prevalence of male patients and the elderly. Ages ranged from 38 to 85 years, median and mode 63, and the average 64.21 years + 8.9 years.

Regarding the school level, 24.3% were illiterate and 32% had at least completed high

school. The predominant color was not white with 52.6%, was the Catholic religion and marital status, married or stable in 75.7% of patients.

Tabela 2. Distribution of the sample in agreement with the lipidic profile, according to total cholesterol, LDL and HDL. Fortaleza - CE, 2008.

Type of Cholesterol	N	%	Medium $\pm$ DP
Total Cholesterol			
< 200 mg/dl	49	62,9	
200 < CT < 239	19	24,3	
$\geq$ 240	10	12,8	
Total	78	100,0	188,34 $\pm$ 55,31
LDL (mg/dl)			
< 130	57	73,0	
160 > LDL $\geq$ 130	17	21,8	
$\geq$ 160	4	5,2	
Total	78	100,0	109,44 $\pm$ 39,39
HDL (mg/dl)			
> 60	1	1,3	
60 < HDL > 40	13	1,7	
< 40	64	82,0	
Total	78	100,0	34,16 $\pm$ 9,63

For cholesterol, there was a risk for health of the patients had 37.1% total cholesterol greater than 200 mg / dl, 82% had a low value high intensity lipoprotein (HDL), or lower of 40mg/dl and only 5.2% had LDL> 160mg/dl.

DISCUSSION

The occurrence of CAD was more prevalent in the male population. It is believed that women are protected against the development of coronary problems due to female hormones that protect their coronary arteries. The biological explanation for this finding is based on feminine protection by estrogen, which directly influences the circulatory system, promoting vasodilatation and inhibiting the progression of atherosclerotic processes, thus avoiding ischemic processes.^{4,10-1}

After menopause, however, the incidence of CAD in women increases rapidly and becomes almost equal to the sum men.⁴ are also differences in adherence to the risk factors and the way men and women found themselves exposed them along the life.¹⁰

However, currently, it is observed that the increased incidence of heart problems in women, due to changing their life style and increased susceptibility to risk factors such as smoking and greater exposure to stress.¹²

Regarding age, most patients were older than 60 years. The risk of coronary events takes place in accordance with increasing age. The incidence of coronary artery disease and myocardial infarction increases with age. More than half of people with coronary heart disease are at least 65 years of age^{4,13} which meets the present study.

One study found that while the association between age and the presence of CAD for males increases progressively with age in women, this association is statistically significant only after 70 years of age.¹³

The atherosclerotic process begins in a fairly young age. Thus, there is the need for early adoption of preventive measures. The nurse educator considered genuine, must participate in educational campaigns, as well as guide and encourage patients to fully adopt healthy habits as soon as possible.

Greater education is associated with a better risk profile for coronary artery disease in adults of both sexes which agrees with the results of the present work.¹⁰

Lower socioeconomic status is associated with increased mortality from heart disease, probably due to the accumulation of risk factors. People with lower education are more often smokers, sedentary, angry, pessimistic, depressed and dissatisfied with their work, and have fewer emotional and social support and self-esteem, as well as being a limiting factor in controlling the disease.¹⁴

In the U.S., the prevalence of risk factors for ischemic heart disease and stroke, together with certain behaviors such as smoking and sedentary lifestyles are different when considering the aspect of ethnic / racial. It was observed that the percentage of people who had two or more risk factors for ischemic heart disease and stroke was higher among blacks and among Indians when compared to the white ones.¹⁵

In Brazil, studies that analyze health indicators by race / color confirm that racial categories predict important variations in mortality.¹⁶ According to literature, blacks have higher susceptibility to develop heart disease than people of other races for reasons not yet sufficiently explained.¹⁷ it is assumed that some of the racial differences in cardiovascular events are mediated by genetic factors that determine disease severity and response to drugs specific.¹⁸

The attribution to God to make definitive decisions about heart disease reveals the integration of it into a global view of

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existence, where life, death, disease and suffering are phenomena that are beyond the control of men. Religion and belief in God let the personal experiences of illness and subjection to therapeutic procedures, incomprehensible and intolerable, become intelligible and bearable. Beliefs, in attributing the origin of the disease to some higher power, show a requirement of determinism and persistence of a cosmology in which the natural, social, individual and supernatural are combined into the same order.¹⁹

In a study conducted in São Paulo there was no independent association with myocardial infarction according to marital status evaluated. Preferred to interpret the findings as insufficient biological plausibility. With respect to this hypothesis, it was postulated that, depending on marital status, mental stress could be different and may be a potential risk factor associated with IAM.²⁰ Have a study conducted in Fortaleza with 146 patients who underwent CABG surgery found that 75.6% of patients lived with a partner.²¹

These data are consistent with this study, in which the majority (75.7%) patients were married. Can be attributed to the fact that currently married people in positions of social responsibility and financial, in addition to living a stressful routine seeking the support of his family. Marital status may be a favorable factor for the recovery of the patient's health because it is believed that the patient receives emotional support significant and is encouraged by his companion to obey properly to changes in lifestyle that are imposed due to heart disease.

It is known that the combination of several risk factors for cardiovascular disease is decisively involved in the development of coronary disease. Individuals with multiple risk factors are very likely to develop at some stage of his life, coronary artery disease. These factors have an effect additive.³

The nurses who accompany patients with heart diseases should develop strategies aimed at health education, especially for those with greater number of risk factors related to cardiovascular problems. Should be considered both sociodemographic characteristics, as well as risk changeable behaviors.²¹

Regarding the lipid profile, elevated levels of LDL and VLDL in the blood seem to have a direct relationship with coronary risk, while high levels of LDL and low HDL are indications of a lower risk of disease cardiovascular. In

this study, it is worrying because the cardioprotective cholesterol (HDL) is lower than recommended, because high concentrations can prevent progression of cardiopatias.⁵ Despite the high valuation of the control of lipids to reduce cardiovascular risk in the literature, a small percentage of patients achieve recommended levels of LDL and HDL to prevent DAC.¹⁴

Furthermore, these results contrast with evidence that high cholesterol levels are largely responsible for coronary heart disease. A case-control study in Sao Paulo corroborates this finding because it showed that serum total cholesterol was not a predictor for the occurrence of acute myocardial infarction, since the average levels of total cholesterol in cases were similar to the controls (195.74 vs. 195.46 mg / dl). And the high serum levels of HDL demonstrated to be significantly associated with protection against acute myocardial infarction.^{5,20}

The mean value of cholesterol in patients was 188.34 mg / dl very close to the value found in the literature. A prevalence study conducted in some cities in Brasil²³ found that the average level of total cholesterol in the population studied was 199.0 ± 35.0 mg / dl, 40% of the population has total cholesterol > 200 mg / dl and 13 % above 240mg/dl. In Sao Paulo (SP), Santos (SP) and Brasilia (DF), 41%, 57% and 30% of participants had serum cholesterol above 200 mg / dL, respectively.²²

Study in Santa Catarina found that LDL cholesterol above 160 mg / dl was present in 3.3% (95% CI 2.3, 4.3) and LDL cholesterol between 130 and 160 mg / dl in 13.7% (95% CI 11.9, 15.5) of the sample, and both total cholesterol and to LDL, the differences were not statistically significant regarding the gender.²³ These data do not differ much from those found in this study (5, 2% of the patients had LDL > 160mg/dl and 21.8% between 130 and 160 mg / dl).

Some important conclusions were obtained with a study in 2006 as the obvious need to reduce levels of LDL. Furthermore, although the recommendations for the treatment of dyslipidemia are well known, a small percentage of patients achieve the desired values of cholesterol. There is therefore a clear need to improve the management of patients at high risk for a cardiovascular event, especially in relation to dyslipidemias.¹⁴

A long time ago, and dyslipidemia are considered conventional risk factors with the

highest probability for the development of cardiovascular disease established from the study Framingham.²⁴ Nevertheless, many patients with coronary artery disease do not have these conventional risk factors. It becomes increasingly evident that a significant proportion of the population develops ischemic diseases and cerebrovascular diseases despite not fit into the high risk category. Studies have shown that conventional risk factors are associated with less than half of the events cardiovascular.²⁵

Thus, new risk factors emerge as important cardiovascular risk stratifiers with increasing knowledge of the pathophysiology of the process of atherothrombosis. In connection with the visceral obesity, hypertriglyceridemia, hyperinsulinemia, and other markers, the presence of an increased proportion of LDL is a marker for the additional excessive response of post-prandial plasma triglyceride and a worsening of their clearance, which characterizes a lipemia postprandial directly related to the state of atherogenic individuals.²⁶

CONCLUSION

The characterization of the lipid profile of patients with coronary artery disease provides valuable data for understanding this condition, as well as its characteristics and interactions with other cardiovascular risk factors. Knowledge of these factors is of great importance for the establishment of strategies for prevention and control of cardiovascular disease.

This study found low levels of HDL and LDL in patients with CAD, which provides support for the hypothesis of an increased cardiovascular risk related to low HDL than with elevated LDL. However, it is necessary to carry out further studies to analyze and test this hypothesis.

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