48 - LIPID PROFILE AND COMPARISON BETWEEN THE SEXES OF PRE-TEENS THAT PRESENT ABDOMINAL OBESITY

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INTRODUCTION

In recent years, due to the urbanization and industrialization processes, the population in general has consumed an increasing quantity of high-calorie food, which occurs along with a decrease in physical activity, since children and the young are led to introduce into their routines sedentary forms of leisure, as the computer and television, among others. Thus, the modernization, with its habits, has the sedentary life as a reflex and – automatically – the obesity, which affects the health and the quality of life of the population. (TARDIDO; FALCÃO, 2006).

Characterized by excessive accumulation of fat in the body, obesity is considered a risk factor for developing cardiovascular diseases. Moreover, it can determine emotional imbalances that affect the quality of life. (ADES; KERBAUY, 2002). Its hegemony, according to the authors, has been increasing in recent decades, despite the many existing treatments, coming to be characterized by experts as an epidemic.

As I Guidelines for the Prevention of Atherosclerosis in Childhood and Adolescence (2005), there is an important relationship between the occurrence of obesity and dyslipidemia in children. In studies with children and adolescents in the population of Campinas-SP and Florianopolis-SC, we found a prevalence of 35% and 10% for hypercholesterolemia, respectively. These data can be directly related to excess weight, because obesity is considered a criterion for screening lipid profile in children and adolescents.

There is a connection between abdominal obesity and cardiovascular risk factors that can lead young people to be affected by various diseases (MCCARTHY, ELLIS, COLE 2003; GRUNDY et al., 2004). Thus, with regard to metabolic changes, these authors found that the association of waist circumference (WC) with dyslipidemia were significantly related to hypercholesterolemia, suggesting that WC is an indicator for atherosclerotic cardiovascular disease. Currently, there is a great need to make preventive screenings in infancy due to the fact that they frequently are found at critical lipid profiles of children and adolescents, which can contribute even to the premature development of coronary artery disease (FRANCE; ALVES, 2006).

GOAL

To identify the lipid profile in adolescents 10 to 14 years of age who present a profile of abdominal obesity, and compare the levels of total cholesterol, triglycerides, HDL-C and LDL-C levels between the sexes.

METHODOLOGY

This is a descriptive cross-sectional (THOMAS, NELSON, 2001). The research project was approved by the Ethics in Research (CEP) Anhanguera Education under the opinion No. 136/2010.

POPULATION AND SAMPLE

The study population consisted of 393 pre-adolescents of both sexes, aged between 10 and 14 years, students of the four major schools of the state, from Anapolis-GO, where they live, and who had abdominal obesity.

PROCEDINGS AND INSTRUMENTS

The performed evaluations were: waist circumference, and later, laboratory tests, triglycerides, total cholesterol, HDL-c and LDL-c. All these examinations were performed at Santa Casa de Misericórdia de Anápolis-GO

Waist circumference (WC) was measured in duplicate by Sanny tape at the end of expiration at the midpoint between the last rib and the anterior superior iliac crest (Johnson et al., 2009).

The classification of abdominal obesity was defined from CC above the percentile 90 for age, sex and ethnicity, as proposed by Fernandez and Redden (2004), which showed values of CC in the age group 2-18 years for racial groups Euro-Americans, African Americans and Mexi-American as well as for ethnic groups combined, based on NHANES III (n = 9713), which emphasized the importance of the classification of ethnic aspects in clinical application and in epidemiologic research. Due to the ethnic diversification in Brazil, the present study chose to use the reference of the combined ethnic groups.

For data analysis, the descriptive statistics of the SPSS 11.0 program was used. Tests of "t" of student for independent samples were employed to compare the levels of total cholesterol, triglycerides, HDL-c, LDL-c and BMI, between the sexes.

RESULTS AND DISCUSSION

The change in lipid levels is a fact that affects countless children and adolescents. This disorder is characterized as a global health problem that requires intervention programs for the target audience (Carvalho et al., 2007). In this sense the present study addresses the importance of identifying, in pre-adolescents, the occurrence of hypercholesterolemia by the determination of the lipid profile.

The research involved 393 adolescents, 210 males and 183 females, between 10 and 14 years of age. In Table 1 are exposed the normal and quantitative values of adolescents who have shown changes of biochemical parameters of dyslipidemia. With regard to total cholesterol, 63 male adolescents are within the desirable values, 60 are at borderline level and 87 are with the total cholesterol above the reference values. But among female adolescents, 66 were within the reference values, 48 are at the

borderline level and 69 are with the total cholesterol above the desirable level. In boys, increased values of total cholesterol were observed, greater than those found in girls. However, no significant differences between the sexes were noticed. It was found that 156 young people (39.69% of participants) had hypercholesterolemia.

Table 1- Normal Values and Quantities of Adolescents Who Showed the Changes in the Biochemical Parameters of Dyslipidemia.

Factors	Normal reference values	Within desirable values		Within values		Borderline	With values	increased
		Male	Fem.	Male	Fem.	Male.	Fem.	
Cholesterol Total	< 170 mg/dL	63	66	60	48	90	**73**	

With respect to total cholesterol, the study by Teixeira, Veiga and Sichieri (2007) demonstrate an average higher in girls than in boys, a fact that contradicts the current study, in which the values of total cholesterol were higher in boys. Another study that reinforces the contradiction of the results found in this study was the study by Moura et al. (2000), that also showed the total cholesterol levels higher in girls than in boys. Santiago et al. (2002) note in their study that among the hypercholesterolemics, girls present the average values of total cholesterol higher than those of boys, which contradicts the results obtained in this study.

With respect to another variable lipids - triglycerides - this research showed, among male participants, a percentage of 22.85% above desirable values, 11.42% within the threshold values and 65.70% within the figures given for reference. As for female participants, triglyceride values were found 14.75% above the reference values, 13.11% in the values considered borderline and 72.13% of the analyzed girls are within the desirable values, according to Table 2. There has been no significant difference between the sexes

Table 2- Triglyceride levels between sexes

TRIGLYCERIDE	%	
	Female	Male
Number of individuals within reference values	72.13	65.70
Number of individuals above reference values	14.75	22.85
Number of individuals in borderline of ref. values	13.11	11.42

The study by Rodrigues et al. (2009) reinforces this contradiction by stating that 5.9% of girls tested in their study have higher concentrations of triglycerides, compared with only 3.4% of boys. According to the authors, the change of one or more variables may increase the prevalence of risk factors for development of cardiovascular diseases

Robespierre et al. (2006), in their study on overweight and cardiovascular risk factors, state that of the children and adolescents observed, one third had total cholesterol levels above the desirable values, increasing the risk of future cardiovascular complications.

Analyzing the LDL-c, of the183 female adolescents included in this study, we found that 57.37% are within acceptable values, 34.42% in the values called borderline and only 8.29% are with levels above the ones taken up as reference. Of the 210 boys studied, 48.57% were within the desirable values, 34.28% in threshold values and 17.14% above the reference values. Thus, when compared, we observe that boys have higher levels of LDL-c than girls (Table 3).

Table 3- Biochemical indicators of LDL-c

LDL-c	%	
	Female	Male
Number of individuals within reference values	57.37	48.75
Number of individuals above reference values	8.29	17.14*
Number of individuals in borderline of reference values	34.42	34,28

*p<0,05

We note, however, that the LDL-C values detected in previous studies, compared with those found in this research, show disagreement. From this perspective, Giuliano et al. (2005) in his study on distribution of serum lipids in children and adolescents of Florianopolis, SC found that young girls presented higher concentrations of LDL-C than the boys.

The study by Faria et al. (2006), with the aim of analyzing the relationship between adolescents with altered lipid profile and nutritional status according to sex, corroborates with the study by Giuliano et al. (2005), in which female adolescents had, both LDL-C and total cholesterol above the desired levels, however disagreeing with this investigation.

Seki et al. (2001), in order to establish reference intervals for TG, TC, LDL-c and HDL-c, found in their study that the variables for TG, TC and LDL-C, girls presented higher values than boys, but about the values of HDL-c there was no difference between the sexes.

According to Krauss (2004) apud Ozelame and Silva (2009), the elevation of LDL-c and CT concentrations is associated with increased risk of cardiovascular disease, as opposed to HDL, which act as a defense mechanism against these diseases. Given this evidence, the girls are more prone to risk factors to health in accordance with changes in lipid levels.

Thus, with regard to the HDL-c of the 210 boys studied, 39.50% had levels below the desirable values, which means outside of what is deemed appropriate, and 60.65% were found at levels above the reference values, which means within what is considered appropriate. However, of the 183 girls observed, 59.90% showed HDL-C levels below the reference values, placing themselves within what is considered as inadequate, while 41.42% of the girls find themselves with values above those recommended, therefore within normality. Thus, as for the HDL-c, the desirable level was higher in males, as shown in Table 4.

Table 4– Biochemical indicators of HDL-c

HDL-c	%	
	Female	Male
Number of individuals below reference values (Inadequate)	59.90	39.50
Number of individuals above reference values (Adequate)	41.42	60.65*

*p<0,05

Based on the results of HDL-c found, we can see that the study by Ferreira, Oliveira and France (2007) is compatible with the present study in only one aspect: the predominant number of girls who have levels of HDL-c below the values of reference, since the authors observed in their study that none of the boys had low levels of this variable lipid. However, in this study, 99 of the 210 boys studied showed levels below the reference values.

According to the the study by Roberts et al. (2009) on the presence of Metabolic Syndrome in adolescents and its association with cardiovascular risk factors, more female adolescents than male adolescents show levels of HDL-c below the benchmarks. These findings corroborate this study, showing that the desired levels were more significant in boys.

However, the work of Faria, Dalpino and Takata (2008) disagrees with the results presented in this study regarding the levels of HDL-c. By analyzing the lipids and lipoproteins in children and adolescents from an outpatient clinic in a public university hospital, the authors found that, as to the analysis by gender, the variable HDL-c showed average values higher in females. However, with regard to age, the HDL-c showed no variation.

Silva et al. (2007) in his study on lipid profile and its association with dyslipidemia in children and young people, found that plasma levels of HDL-c in females were significantly greater than in males. This fact contradicts the results investigated in this research.

Moreover, the study by Grillo (2005) on the lipid profile and obesity in low income students, did not identify gender differences in variables lipid levels observed, and found the presence of hypercholesterolemia in 3.1% of the sample and an association of low levels of HDL-c to the presence of obesity.

In the study by France and Alves (2006) on dyslipidemia in children and adolescents in Pernambuco, differences also were not presented between the sexes in the average levels of lipids such as LDL-c and HDL-c. The authors concluded that over 70% of all children and adolescents studied showed acceptable levels of lipids, a fact which did not correspond with the findings of this research, in which lipid changes were strongly perceived, especially for the male sex.

CONCLUSION

It was found that 163 young people (40.75%) had hypercholesterolemia. A lipid profile was defined based on the literature in which it was found that as to the total cholesterol, triglycerides and LDL-c, it can be observed that boys show levels higher than those of girls. But, as to the lipids variable HDL-c, the pre-adolescent boys fall better than females at the level considered as a benchmark Thus, this study found that males had a higher prevalence of hypercholesterolemia than the females.

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LIPID PROFILE AND COMPARISON BETWEEN THE SEXES OF PRE-TEENS THAT PRESENT ABDOMINAL OBESITY

ABSTRACT

Cardiovascular diseases are today one of the health problems discussed worldwide. The determining factors are various, and among them the hypercholesterolemia is highlighted, this requiring attention from childhood. The aim of this research was to identify the lipid profile and the comparison between the sexes of pre-teens that present obesity. It is a cross and descriptive research realized with 393 male and female students in the age range between 10 and 14, in the city of Anápolis-GO, that presented abdominal obesity. All laboratory exams were performed in the Santa Casa de Misericórdia of Anápolis-GO. Results: From the total of 210 boys analyzed as to the total cholesterol, 63 are within the desirable values. From the total of 183 girls, 66 are within the desirable levels. As for the triglycerides concentrations, they are within the values considered desirable, 65.71% of the boys and 72.13% of the girls. Referring to the LDL-c, it is within the reference values, 48.57% for the boys and 57.37% for the girls. The variable HDL-c presented itself favorable in 60.65% of the teen-age boys and in 41.42% of the girls. Conclusion: The male sex presented a greater prevalence of hypercholesterolemia than the female sex. We still stress that, due to the incidence of this factor in pre-teens, it is primordial a previous knowledge about the lipid alterations in order that preventive measures be taken early.

KEY WORDS: Hypercholesterolemia; abdominal obesity; pré-teens.

PROFIL LIPIDIQUE ET COMPARAISON ENTRE LES SEXES DES PRÉADOLESCENTS QUI PRÉSENTE UNE OBÉSITÉ ABDOMINALE.

RÉSUMÉ

Maladies cardiovasculaires sont aujourd'hui une des questions de santé mondialement discutées. Etant multiple les facteurs déterminants, et entre eux on met en évidence l'hypercholestérolémie, et celle-ci exige de l'attention depuis l'enfance. L'objectif de cette recherche a été d'identifier le profil lipidique et la comparaison entre les sexes des préadolescents qui présentent de l'obésité. On traite d'une recherche transversale et descriptive, réalisée avec 393 étudiants de sexes féminins et masculins dans une tranche d'âge de 10-14 ans, dans la ville d'Anápolis-GO qui présentent une obésité abdominale. Tous les examens de laboratoire ont été réalisés à l'hôpital de Santa Casa de Miséricorde à Anapolis-GO. Résultats : Des 210 garçons analysés, pour le cholestérol total, 63 sont dans les valeurs souhaitables. Du total de 183 filles, 66 se rencontrent dans les niveaux souhaitables. Quant aux concentrations de triglycérides, elles sont dans les valeurs considérées souhaitables, pour 65,71 % des garçons et 72,13% des filles. Pour ce qui se réfère au LDL-c elles sont dans les valeurs de référence, 48,57% pour les garçons et 57,37% pour les filles. La variable HDL-c se présente favorable à 60,65% des adolescents du sexe masculin et à 41,42% de sexe féminin. Conclusion : le sexe masculin a présenté une plus grande prévalence d'hypocholestérolémie que le sexe féminin. Nous mettons en évidence en plus que, dû à l'incidence de ces facteurs chez les préadolescents, il est primordial la connaissance antérieure des altérations lipidiques, pour que l'on puisse adopter, précocement, des mesures préventives.

MOTS CLÉ: Hypercholestérolémie ; obésité abdominale ; préadolescents.

PERFIL LIPIDICO Y COMPARACIÓN ENTRE LOS SEXOS DE PREADOLESCENTES QUE PRESENTAN OBESIDAD ABDOMINAL

RESUMEN

Enfermedades cardiovasculares son hoy una de las cuestiones de salud mundialmente discutidas. Siendo múltiplos los factores determinantes y entre ellos se destacan hipercolesterinemia, y esa requiere atención desde la infancia. El objetivo de esta investigación fue identificar el perfil lipidio y comparación entre los sexos de preadolescentes que presentan obesidad. Se trata de un investigación transversal y descriptiva, realizada con 393 colegiales del sexo femenino y masculino en la faja etaria de 10 a 14 años, en la ciudad de Anápolis-GO que presentaran obesidad abdominal. Todos los exámenes de laboratorio fueron realizados en la Santa Casa de Misericordia de Anápolis- GO. Resultados: de los 210 niños analizados con relación al colesterol total, 63 están dentro de los valores deseables. Del total de 183 niñas, 66 se encontraron dentro de los niveles deseables. Cuanto a las concentraciones de triglicéridos, están dentro de los valores considerados deseables, 65,71% de los niños y 72,13% de las niñas. Con referencia a los LDL-c están dentro de los valores de referencia, 48,57% para los niños 57,37% para las niñas. La variable HDL-c se presentó favorable en 60,65% de los adolescentes del sexo masculino y en 41,42% del sexo femenino. Conclusión: El sexo masculino presento mayor prevalencia de hipercolesterolemia que el sexo femenino. Resaltamos aun que, debido a incidencia de esos factores en preadolescentes, es primordial el conocimiento previo de las alteraciones lipidias, para que se puedan adoptar, precozmente, medidas preventivas.

PALABRAS CLAVE: hipercolesterolemia; obesidad abdominal; preadolescentes.

PERFIL LIPÍDICO E COMPARAÇÃO ENTRE OS SEXOS DE PRÉ-ADOLESCENTES QUE APRESENTAM OBESIDADE ABDOMINAL

RESUMO

Doenças cardiovasculares são hoje uma das questões de saúde mundialmente discutidas. Sendo múltiplos os fatores determinantes, e dentre eles destaca-se a hipercolesterolemia, e essa requer atenção desde a infância. O objetivo desta pesquisa foi identificar o perfil lipídico e comparação entre os sexos de pré-adolescentes que apresentam obesidade. Trata-se de uma pesquisa transversal e descritiva, realizada com 393 escolares dos sexos feminino e masculino na faixa etária de 10 a 14 anos, na cidade de Anápolis-GO que apresentassem obesidade abdominal. Todos os exames laboratoriais foram realizados na Santa Casa de Misericórdia de Anápolis-Go. Resultados: Dos 210 meninos analisados quanto ao colesterol total, 63 estão dentro dos valores desejáveis. Do total de 183 meninas, 66 encontram-se dentro dos níveis desejáveis. Quanto aos concentrações de triglicerídeos, estão dentro dos valores considerados desejáveis, 65,71% dos meninos e 72,13% das meninas. No que se refere ao LDL-c estão dentro dos valores de referência, 48,57% para os meninos e 57,37% para as meninas. A variável HDL-c apresentou-se favorável em 60,65% dos adolescentes do sexo masculino e em 41,42% do sexo feminino. Conclusão: o sexo masculino apresentou maior prevalência de hipercolesterolemia do que o sexo feminino. Ressaltamos ainda que, devido à incidência desse fator em pré-adolescentes, é primordial o conhecimento prévio das alterações lipídicas, para que se possam adotar, precocemente, medidas preventivas.

PALAVRAS CHAVE: Hipercolesterolemia; obesidade abdominal; pré-adolescentes.