

STUDY CONCERNING THE RISK FACTORS OF HIGH BLOOD PRESSURE IN ADOLESCENCE

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Abstract: Premises: Cardio-vascular diseases represent the main cause of death in the industrialized countries and in Romania. From a general point of view, but also from a cardio-vascular point of view, paediatricians have always been concerned about the adolescents' health, but this domain remains undeveloped and insufficiently defined. Purpose: This study tries to identify and systematically organize the most relevant aspects of the cardio-vascular risk factors in adolescence, correlated with the probability of early high blood pressure in adulthood. Materials and method: The study includes 362 asymptomatic adolescents, between 17 and 19 years old. We evaluated the food habits, physical effort level and stress exposure, the use of toxic substances, glucose and lipids metabolic parameters. We also determined the body mass index and measured the blood pressure. Discussions: Our results are similar with the ones reported worldwide, of an unhealthy lifestyle, based on unhealthy food habits, sedentary tendencies and toxic substances exposure like smoking. Conclusions: The results of the present study represent an alarming signal concerning the cardio-vascular state of the adolescents in our country.

Keywords: risk factors, blood pressure, adolescents

Rezumat: Premise: Bolile cardio-vasculare ocupă primul loc în rândul cauzelor de deces în țările industrializate și în România. Sănătatea adolescenților, atât din punct de vedere general cât și din punct de vedere cardiovascular face parte dintre preocupările pediatrice de decenii, dar domeniul mai sus amintit rămâne din păcate încă puțin dezvoltat și insuficient definit. Scopul lucrării: Prezentul studiu a încercat să identifice și să sistematizeze cele mai relevante aspecte ale factorilor de risc cardiovasculari la adolescenți, corelat cu probabilitatea de apariție a hipertensiunii arteriale precoce în cursul vieții de adult. Material și metodă: Studiul populațional, privind precizarea agregării factorilor de risc cardiovascular corelați cu apariția hipertensiunii arteriale s-a realizat la un număr de 362 de adolescenți asimptomatici, cu vârste cuprinse între 17 și 19 ani. S-au evaluat comportamentul alimentar, nivelul de activitate fizică, expunerea la stress, consumul de toxice, parametrii metabolismului lipidic și glucidic. S-a determinat de asemenea indicele de masă corporală și s-a măsurat tensiunea arterială. Discuții: Rezultatele se înscriu în tendința raportată în general în

lume, aceea a unui stil de viață nesănătos caracterizat prin alimentație nesănătoasă, tendința la o viață sedentară, expunerea la toxice prin fumat. Concluzii: Rezultatele prezentului studiu reprezintă un semnal de alarmă privind starea de sănătate cardiovasculară a adolescenților din țara noastră.

Cuvinte cheie: factori de risc, hipertensiune arterială, adolescență

INTRODUCTION

According to the World Health Association's statistics from 2007 in Europe, the deaths from cardio-vascular cause occupy the first position, followed by the deaths from neoplastic affections. The compared analysis of the cardio-vascular diseases and the estimated lifetime for Romania, places us on one of the last positions in Europe.(1)

In Romania, 4 out of 10 adults suffer from high blood pressure, many of them being younger than 40 years of age.(2)

The routine measurements of the blood pressure on the children older than 3 years old show a very low incidence of high blood pressure in children, compared to adults. However, the incidence is increased with ageing. High blood pressure due to secondary cause is more frequent at infants, while the primary cause is responsible for high blood pressure after 10 years old, with the highest levels during adolescence.

A very low number of youngsters are included in clinical trials, because few doctors are concerned about high blood pressure in children rather than young adults.

High blood pressure is characterized by important etiopathogenic heterogeneity. Many intercorrelated pathogenic factors intervene in initiating, maintaining and progression of the blood pressure condition. Due to the lacking of a doubtless ethiology concerning the essential high blood pressure, we tend to be very careful with the cardio-vascular risk factors.

There is a relationship between the debut of high blood pressure and a variety of risk factors, which begins during childhood.

In the present study, we started from the premise that the morbidity and mortality due to cardio-vascular diseases can be decreased by correcting these risk factors. The prophylactic proceedings are more efficient when

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applied at a younger age.

MATERIALS AND METHOD

Our study includes 362 asymptomatic adolescents, between 17 and 19 years old. The study extends from September 2008 until April 2009, on the occasion of the medical periodical examinations at the school clinic. Our subjects were voluntaries. We evaluated the food habits, physical effort level and stress exposure, toxic substances consumption using the questionnaire method. We also analysed the anthropometric indexes in close relation to the increased cardio-vascular risk, body weight and height; determined the body mass index in relation to sex and age. In addition, we determined the glucose and lipids metabolic parameters.

The blood pressure was measured in a sitting position, after 5 minutes of rest, with 2 measurements at 2 minutes interval, taking in consideration the mean value of the two measurements. In order to place it within the cardio-vascular risk group, we considered the criteria from the 4th Report of the Diagnosis, Evaluation and Treatment of the High Blood Pressure in Children and Adolescents.(3)

The analysis of the cardio-vascular risk was done using statistic methods. All our subjects were given complete information in order to understand the scientific reasons of the study and its benefits.

RESULTS AND DISCUSSIONS

The food habits of the studied adolescents were similar to the worldwide tendencies.

The meals schedule of these adolescents was, most of the times, unsystematic. Within our studied lot, 22.9% of the cases had 2-3 meals a day, 64.1% had 3-4 meals a day and only 13% had 4-5 meals a day, as per the recommendations of the paediatric speciality guidelines. In addition, the majority of the interviewed adolescents do not read the nutritional information of the food and their nutritive values. The alimentation is unhealthy, rich in unsaturated fats and fast food products. From the interviewed adolescents, 68.8% frequently eat foods rich in unsaturated fats, like fat cheese, processed cheese, cream, pork and pork products. A significant percent, 35.9% of the subjects frequently have a fast food alimentation especially fried potatoes. In addition to these unhealthy habits, they frequently eat semi-prepared foods rather than fresh ones.

Important information obtained from screening programmes proves that the prevalence of various affections as dislipidemias and high blood pressure is increased with the increasing of the body mass index.

Almost half of the obese and overweight persons presented modified values of the blood lipids. Over 49.02% had high blood cholesterol levels of 160-200 mg/dl and 23.54% had the cholesterol more than 200 mg/dl. In addition, 49.03% had increased LDL-cholesterol values, 35.3% measuring >129 mg/dl. Almost one third, 29.42% of the overweight subjects, had high triglycerides levels >125 mg/dl.

An overwhelming percent, 86.28% of the obese and overweight persons, had low values of HDL-cholesterol; 45.10% measured between 45-55 mg/dl and 41.18% had less than 45 mg/dl HDL-cholesterol. All of the obese subjects measured HDL-cholesterol less than 55 mg/dl. The alteration of the lipids profile was obvious to the overweight subjects

group compared to the normal weight persons.

The evaluation of the physical effort during the sport classes shows that it is agreeable within the studied group, but almost inexistent during their free time. Sedentary tendencies, television and computer habits represent the most frequent preoccupations during the free time. These static activities are increased over the weekends.

In addition, chronic sleeping disturbances are associated with a poor lifestyle. A sleeping schedule around 7-8 hours per night represents the most important fact in combating the tiredness. An important percent of the subjects, 40.9%, sleep around 7-8 hours per night, 31.8% sleep 6-7 hours per night, while only 2.5% sleep around 5-6 hours per night; the sleep disturbances are also due to the toxic substances consumption as coffee, tobacco and alcohol.

Smoking, as a cardio-vascular risk factor is very well documented. Generally, an important number of adolescents are smoking. Considering the studied group, a number of 162 from the total of 362 subjects were smokers, which represents 44.8% of the interviewed adolescents. Evaluating the number of cigarettes daily, 17.4% smoke around 4-5 cigarettes per day and 5.5% smoke between 5 and 10 cigarettes per day; 13.5% smoke around 10-15 cigarettes per day and 8.3% smoke one pack daily. Most of them declared that they usually smoke at school and when meeting with their friends.

A significant number of 59 subjects presented high blood pressure at the two consecutive measurements and they were included in the high blood pressure group. The general prevalence of essential high blood pressure was about 16.3%, with the systolic values increased compared to the diastolic values.

CONCLUSIONS

The results of the present study are similar to the ones reported worldwide, of an unhealthy lifestyle characterized by an unhealthy alimentation, a sedentary life and toxic substances exposure. Our results represent an alarming signal concerning the cardio-vascular state of the adolescents in our country.

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