LABORATORY PARAMETERS AND BODY MASS INDEX IN YOUNG PEOPLE WITH METABOLIC SYNDROME

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ABSTRACT: Characterizing the epidemiology of metabolic syndrome (MS) currently has a number of problems. On the one hand, quite a lot of data has been accumulated on the prevalence of both the syndrome and its individual components in various regions of the planet. On the other hand, comparison of the obtained data is almost impossible due to the lack of standardization in the studies conducted (2,4).

KEYWORDS: Individual components, pathogenetic factors interact, femtoliters, quality of life (QoL).

INTRODUCTION

Until recently, research has been actively conducted to determine the priority of individual components of MS and their contribution to the predicted risk of developing CVD. Among the leading ones are hypertension, carbohydrate metabolism disorders and obesity. The latter concept includes a set of indicators that characterize both the anthropometric characteristics of an increase in the proportion of adipose tissue in the body and lipid metabolism disorders recorded at the biochemical level (1,3).

In most literature sources, the known factors in the pathogenesis of metabolic syndrome are considered as alternative, one of which is recognized as dominant, the main one, and the others as its consequence. Information about how various pathogenetic factors interact with each other, how their combination affects the formation of components of the metabolic syndrome, is practically not presented in the modern scientific literature.

AIM OF THE STUDY

To identify the effect of excess weight on clinical and laboratory parameters in young people with metabolic syndrome

MATERIALS AND METHODS

We examined 58 patients with MS who were undergoing inpatient treatment in the neurological department: 30 men, 28 women. The examination of patients included anamnesis and a neurological examination using standard methods. Routine laboratory and instrumental studies were carried out. For comparative analysis, 2 groups of patients were identified. Group 1 (n=26) consisted of overweight patients (body mass index more than 25), group 2 – patients without excess body weight (n=32). Body mass index was calculated using a standard formula. There were no significant differences by gender in the compared groups. Statistical processing was carried out using the parametric Student's test and the non-parametric Mann-Whitney test with the assessment of correlation dependence, linear and non-linear regression analysis, using the Microsoft Excel and Statistica 10.0 programs.

RESULTS AND ITS DISCUSSION

The age of patients in group 1 was 68.8±5.6 years, in group 2 – 63.1±6.7 years; there was a significant difference ($p < 0.05$), probably due to the characteristics of the compared groups. The mean platelet volume (MPV) in group 1 was 11.5±1.6 femtoliters, in group 2 – 10.2±0.9 femtoliters. There was a significant difference in these indicators, which indicates large platelet sizes in patients with excess body weight. Also in group 1, higher values of glucose and cholesterol in the blood were observed upon admission (7.0±1.5 mmol/l and 6.1 ±0.7 mmol/l, $p < 0.05$; 5.8±0.8 µmol/l and 5.0±0.8 µmol/l, $p < 0.05$). The MPV value and the level of glycemia upon admission, according to the literature, are predictors of the prognosis of chronic cerebral ischemia.

The quality of life (QoL) of patients with MS was assessed based on the results of their survey using the SF-36 questionnaire. A comparative analysis of this indicator was carried out between representatives of the same age categories. A decrease in the "physical component of health" of quality of life was observed in 46.6% (27 respondents) in all study groups, regardless of age and type of eating behavior - among people aged 25 to 44 years, a decrease in this indicator occurred in 24.6%, the median score was 49 (41; 54). Also, a decrease in quality of life in the physical component of health was observed in 52.7% of patients aged 45 to 59 years – 40 (33; 49) points, and in 62.7% of representatives of the older age group – 37 (31; 44) points, respectively. The median values of "raw" scores of all four components characterizing this health indicator were predominantly at medium and high levels (> 60% of the maximum score); no differences were found depending on the type of diet. The proportion of those examined with low levels of the "mental health component" of QoL in the sample was smaller – 37.8%. Among young patients, a similar picture was observed in 24.6% of cases, and the median value of this indicator was 50 (41; 55) points. A decrease in quality of life according to this indicator occurred among 34.4% of middle-aged people – 46 (37; 54) points, and in 51.8% of representatives of the older age group – 40 (34; 49) points. There were no differences between the groups due to the nature of nutrition, excluding the indicator of the degree of preservation of psychological health in patients over 60 years old - in people with a restrictive type of eating behavior it was higher compared to the emotional and external type of nutrition (p = 0.02). Thus, in patients with MS, QOL deteriorated to a greater extent due to the physical component.

Direct correlations were found between the clinical manifestations of MS with age (r=0.706, p<0.0001), female gender (r=0.219, p=0.001), low level of physical activity (r=0.464, p=0.0001), the proportion of body fat mass (r=0.199, p=0.003), the presence of sleep disorders (r=0.217, p=0.001), predominantly early awakening (r=0.144, p=0.026) and sleepiness during the day (r=0.187, p=0.004), the presence of pathological eating patterns due to family traditions (r=0.193 at p=0.003), hyperphagic reaction to stress (r=0.214 at p=0.001), as well as the amount of daily consumption of caffeine- and tannin-containing products (r=0.139, p=0.031), concentration of glucose (r=0.227, p=0.0001) and TG (r=0140, p=0.043) in the blood, severity of depressive symptoms (r=0.228, p=0.0001) . At the same time, there was an inverse correlation with indicators of stress severity (r=-0186, p=0.004), duration (r=-0.253, p=0.031) and quality of sleep (r=-0.260, p<0.0001).

CONCLUSION

In overweight patients, changes in laboratory parameters are observed in the form of an increase in platelet size and blood glucose and cholesterol levels. A natural decrease in the quality of life in terms of the physical component of health was observed in respondents with MS, regardless of age (p=0.892). The obtained differences are of scientific and practical interest and require further study to individualize the treatment and prevention of cerebrovascular pathology.

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