UDK 616-008.9-085-053.2

EFFICIENCY OF METABOLIC SYNDROME TREATMENT IN CHILDREN AND ADOLESCENSE

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The article is devoted to the problem of the treatment of metabolic syndrome in children and adolescence. The usage of metformin demonstrated the good results in reduction of insulin resistance level in children and adolescence.

Key words: *metabolic syndrome, treatment, metformin, insulin resistance, children, adolescence.*

УДК 616-008.9-085-053.2

ЭФФЕКТИВНОСТЬ ТЕРАПИИ МЕТАБОЛИЧЕСКОГО СИНДРОМА У ДЕТЕЙ И ЛИЦ МОЛОДОГО ВОЗРАСТА

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Статья посвящена проблеме терапии метаболического синдрома у детей и лиц молодого возраста. Применение метформина приводит к снижению инсулинорезистентности в обеих возрастных группах.

Ключевые слова: *метаболический синдром, лечение, метформин, инсулинорезистентность, дети, лица молодого возраста.*

Introduction. The main features of metabolic syndrome are obesity, insulin resistance, disorders of carbohydrate and lipid metabolism and arterial hypertension [1]. According to modern data, about 1.4 million people in the world are obese [4]. In developed countries, obesity is diagnosed in 27% of adults and in more than 15% of adolescents. However, its frequency is steadily increasing [1, 2]. Central obesity in combination with insulin resistance leads to the development of arterial hypertension, cardiovascular diseases, violation of carbohydrate metabolism, which are components of the metabolic syndrome (MS) [3]. Above all insulin resistance plays the most important role in the development of metabolic syndrome [2]. The main target of tactics in metabolic syndrome must be pathogenesis treatment [5].

Aim. The influence of metformin on insulin resistance indexes in children and adolescence with metabolic syndrome was the subject of the research.

Materials and methods. 96 children and adolescence with metabolic syndrome were observed. The diagnosis of metabolic syndrome was made on the base of obesity, arterial hypertension, disorders of carbohydrate and lipid metabolism according to the ATP III (2001) и IDF (2005) recommendations. C-peptide was determined using the immunoferment method. Insulin resistance index HOMA-IR was calculated using the formula HOMA-IR=G (serum glucose level (mmol/L) x Ins (serum immune reactive insulin) (mcUnits/mL) : 22,5; normal – less than 3,5.

Statistic analysis was made using the program Statistika (ver 2009 for Windows), criteria Mann-Whitney, Wilkinson and χ^2.

Results and discussion.

All patients were randomized into 2 groups: first group: 48 children and adolescence received diet and physical training; second group (48 children and adolescence) received diet, physical training and metformin.

The proposed course of therapy lasted for 6 months and the dose of metformin was 1500 – 2000 mg daily.

The comparing of insulin resistance indexes established that after 3 month in children of the 1 group serum C-peptide decreased from 4,2±1,05 ng/ml till 4,15±1,01 ng/ml, and at 2nd group (with metformin) this index decreased from 4,22±1,05 ng/ml till 3,18±0,96 ng/ml (p=0,045).

Insulin resistance index in the 1 group decreased from 5,06±1,16 till 5,01±1,11, and in the 2nd group from 5,05±1,15 till 4,17±1,01 (p=0,007).

After 6 months the rate of C-peptide in the 1 group became 4,01±0,98 ng/ml, and in the 2nd group this index decreased to 2,79±0,51 ng/ml (p<0,001). Insulin resistance index in the 1 group became 4,83±1,01, and in the 2nd group it decreased to 3,01±0,71 (p<0,001).

It should be noted that our data was confirmed that no side effects of metformin in children were established.

Conclusions.

1. Our data confirmed a statistically significant reduction in the level of insulin resistance under the influence of treatment with metformin.

2. Metformin treatment was well tolerated and can be regarded as a pathogenesis factor in the treatment of metabolic syndrome in children.

Literature

1. Кондратьева Л.В. Бигуаниды в терапии сахарного диабета/ Под ред. А.С. Аметова. – М.: Планида, 2013. – 48с.

2. Petrov M., Piskunova N., Anosov A. Randomized placebo-controlled trial of metformin in pediatric patients with obesity // Horm Res 2007; 68 (suppl1): 31.

3. Ram Weiss. Childhood Metabolic Syndrome Must we define it to deal with it? / Diabetes Care May 2011 vol. 34, no Supplement 2. – S171-S176.

4. Raynor HA, Champagne CM. Position of the Academy of Nutrition and Dietetics: interventions for the treatment of overweight and obesity in adults. *J Acad Nutr Diet*. 2016; 116(1):129-147. PMID: 26718656. www.ncbi.nlm.nih.gov/pubmed/26718656.

5. Ruderman NB, Shulman GI. Metabolic syndrome. In: Jameson JL, De Groot LJ, de Kretser DM, et al, eds. *Endocrinology: Adult and Pediatric*. 7th ed. Philadelphia, PA: Elsevier Saunders; 2016:chap 43.