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THE EFFECT OF CIPROHEPTADINE ON SOME RISK FACTORS FOR COMORBID DISEASES

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Abstract:

The article analyzes the results of a study of the effect of cortisol on some hemodynamic and carbohydrate metabolism indices. A group of patients suffering from metabolic syndrome identified according to the IDF criteria (2005) was observed. At the time of the study, the patients were aged 40–59 years (mean age 54 years). Cyproheptadine was prescribed to reduce cortisol levels. The observation lasted 14 days. It was shown that against the background of cyproheptadine use, there is a decrease in the level of endogenous cortisol, blood pressure, glycemia, and immunoreactive insulin.

Keywords: blood pressure, hyperglycemia, cortisol, insulin, comorbid diseases**.**

RELEVANCE.

Comorbid diseases are one of the most pressing issues in modern medicine. They have a significant impact on the quality and duration of life, as well as on the treatment of patients [1,2]. Chronic diseases such as diabetes, cardiovascular diseases, and chronic renal failure are often accompanied by other pathologies. In particular, hypertension is one of the most common comorbidities in patients with chronic renal failure [3]. Patients with diabetes mellitus often develop cardiovascular diseases, chronic renal failure, obesity, and mental disorders [4,5]. Elevated cortisol levels (hypercortisolemia) are one of the risk factors for many diseases [6]. Patients with hypercortisolemia often have hypertension, obesity, dyslipidemia, hyperglycemia, and insulin resistance, which increases the risk of developing comorbid diseases [7,8]. Chronic hypercortisolemia can lead to many problems, including cognitive decline, decreased immunity, and the development of cardiovascular diseases. Therefore, taking measures to reduce cortisol levels is important to reduce the risk of developing comorbid diseases [9,10,11]. One of the drugs that can reduce cortisol levels is cyproheptadine. This drug prevents the activation of 5-HT2 receptors by serotonin, which reduces the release of corticoliberin (also known as corticotropin-releasing hormone, CRH). As a result, there is a decrease in the secretion of adrenocorticotropic hormone (ACTH) by the pituitary gland, and, as a consequence, the production of cortisol in the adrenal glands decreases [13,14]. Cyproheptadine, being an H1-receptor antagonist, has an antihistamine effect. This can reduce stress levels and indirectly affect the hypothalamic-pituitary-adrenal (HPA) axis activity [15]. The ability of cyproheptadine to block serotonin receptors helps to normalize cortisol levels [16].

THE PURPOSE OF THE STUDY.

To study the effect of cyproheptadine on the levels of specific risk factors for comorbid diseases

MATERIAL AND METHODS.

The study included a group of patients suffering from metabolic syndrome, identified according to the IDF criteria (2005). The patients were aged 40-59 years (mean age 54 years). Blood pressure, heart rate, cortisol, glycemia, and immunoreactive insulin were studied. Cyproheptadine was prescribed as a therapeutic agent to reduce cortisol levels, one tablet (4 mg) 3 times a day. The observation lasted 14 days. Statistical processing was done using the MedCalc software (https://www.medcalc.org), developed for biomedical research [17].

RESULTS AND DISCUSSION

The study showed that cyproheptadine resulted in a significant decrease in blood pressure, heart rate, and cortisol levels (Fig. 2). These results are consistent with literature data on the ability of cyproheptadine to reduce endogenous cortisol levels [13,14,16].

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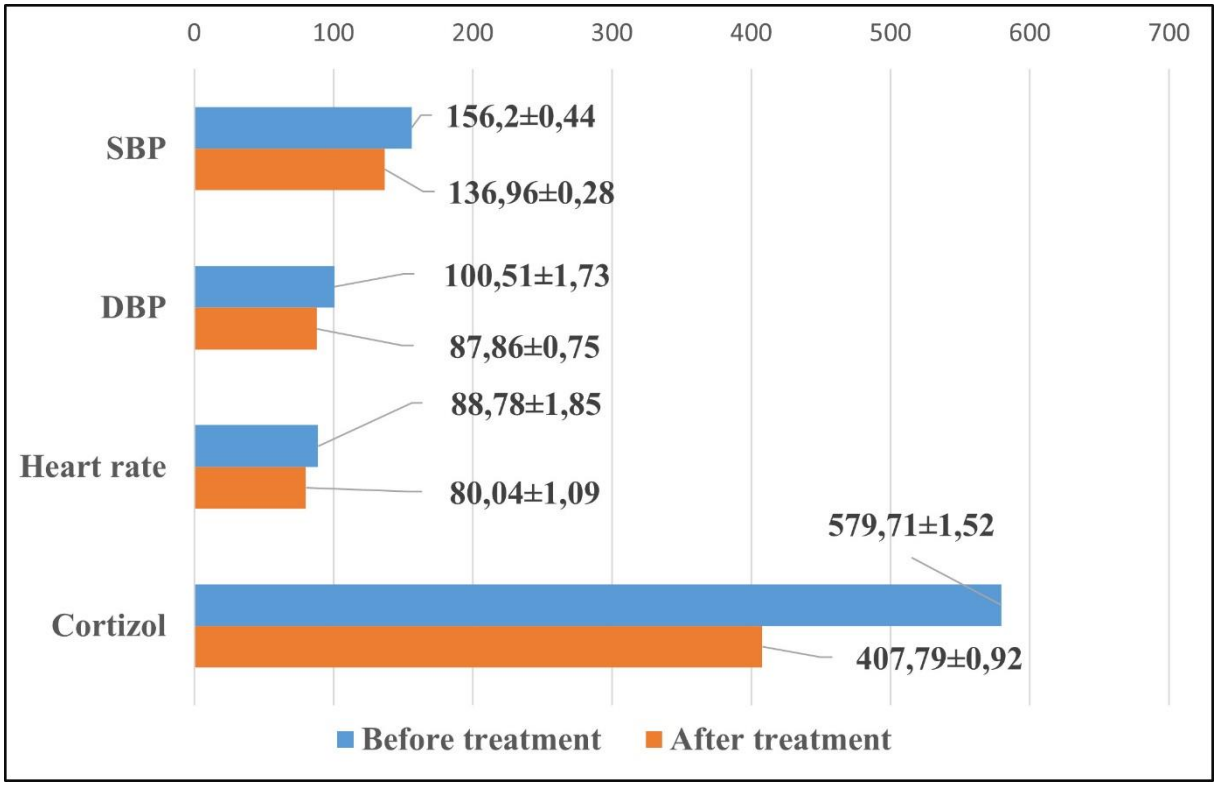

Figure 1. Changes in blood pressure, heart rate and cortisol levels as a result of using cyproheptadine.

Along with the decrease in cortisol levels, there was also a decrease in systolic and diastolic blood pressure (SAD, DAD). These data are consistent with the results of other studies that show that an increase in cortisol levels is associated with an increase in blood pressure [7,8]. It should be noted that the decrease in cortisol and blood pressure levels was statistically significant ($p<0.01$). Our study also revealed a reduction in heart rate. However, this decrease was less significant. Considering that hypercortisolemia can worsen metabolic indices, we assumed that a decrease in cortisol levels could be accompanied by an improvement in metabolic disorders indices. In this regard, the levels of glycemia, immunoreactive insulin, and the HOMA index were analyzed during treatment with cyproheptadine [Fig.2]. As it turned out, the use of cyproheptadine leads to an improvement in carbohydrate metabolism indices. In particular, a decrease in fasting glucose levels and postprandial glycemia levels was observed. Moreover, the decrease in postprandial glycemia indices was more pronounced than the decrease in fasting glycemia levels. A decrease in insulin indices and the HOMA index was also revealed. The results obtained are consistent with the data of other authors on the role of cortisol in carbohydrate metabolism [1-8].

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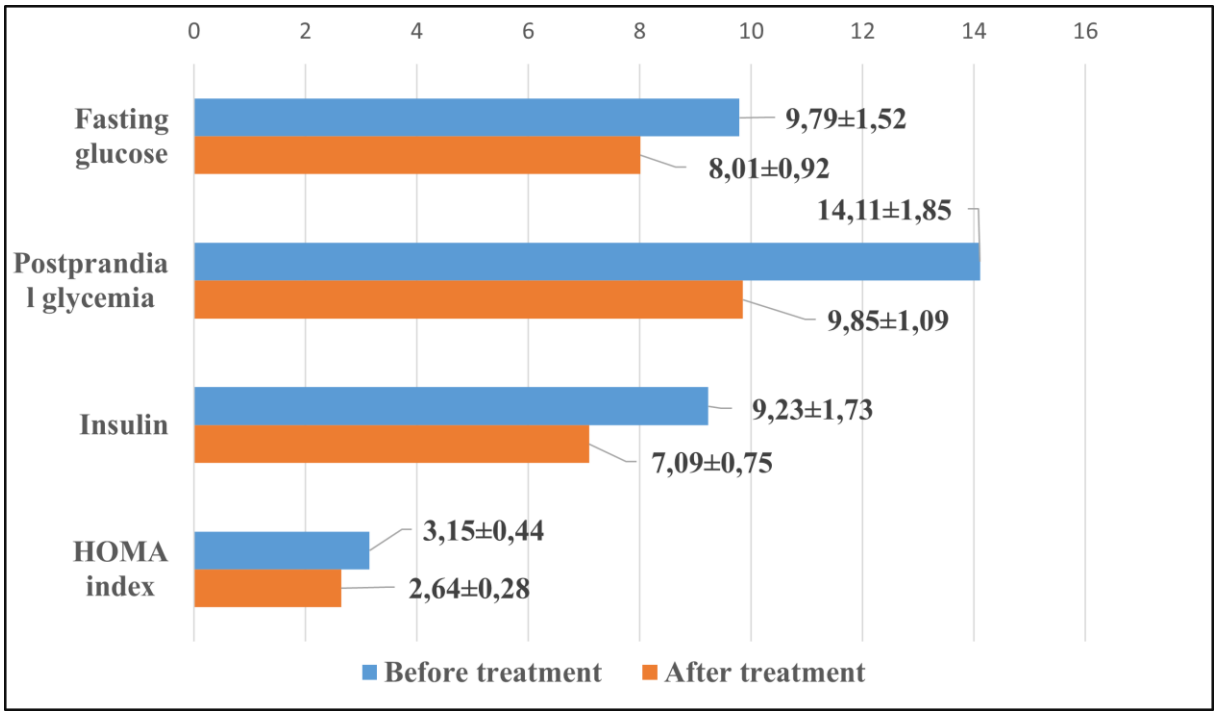

Figure 2. Changes in glycemia, insulin and HOMA index levels as a result of using cyproheptadine.

The obtained results indicate that the use of cyproheptadine, by reducing glycemia and insulin resistance, can reduce the risk of developing comorbid diseases. Studies by other authors also indicate this [9,10,11].

CONCLUSION

Thus, the obtained data indicate that elevated cortisol levels are associated with components of metabolic syndrome, such as insulin resistance and blood pressure. The use of cyproheptadine decreases the levels of these components, leading to a decrease in the risk of developing comorbid diseases. It should be noted that the observation lasted 14 days in this study. More long-term studies should be conducted to study the effect of cyproheptadine on the main components of metabolic syndrome.

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