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Surgical Approach to the Treatment of Purulent Wounds with Protein Metabolism Disorders in Patients with Thyrotoxicosis

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ABSTRACT

The article presents a retrospective analysis of patients with purulent wounds who have impaired protein metabolism against the background of existing thyrotoxicosis. As well as the features of the course of the wound process in this category of patients. All examined patients were divided into two groups: group I included patients (n=37) with purulent wounds of various localizations without thyrotoxicosis. Group II consisted of patients (n=23) who had a purulent wound on the background of thyrotoxicosis.

The results of a retrospective analysis of the study showed that the healing of purulent wounds in patients with thyrotoxicosis is much slower than in patients with purulent wounds without thyrotoxicosis. These patients need a surgical treatment approach together with an endocrinologist.

Relevance

The thyroid gland has a direct or indirect effect on the functions of all organs and systems of the body. Based on this, problems arising in this organ very quickly lead to various pathological conditions -diseases. All types of diseases that are accompanied by thyroid dysfunction contribute to a decrease in working capacity and a deterioration in the quality of life of patients [1].

Thyrotoxicosis is a syndrome, one of the pathologies with a violation of the functions of the thyroid gland, which occurs in various pathological conditions of the human body. The frequency of thyrotoxicosis is 1.2% in Russia [9], and 1.4% in Uzbekistan [7]. However, the problem of thyrotoxicosis is not so much its prevalence, but so much the severity of the consequences. Hormonal shifts occurring during thyrotoxicosis actively affect metabolic processes, which lead to the development of severe changes in all body systems [3; 4; 5; 8]. The fairly wide prevalence and high frequency of cases of thyroid dysfunction in practice, in particular, thyrotoxicosis, increases interest in this pathology among doctors of various specialties [2; 6].

Hormones secreted from the thyroid gland play a huge role in the human body: they increase the sensitivity of adrenoreceptors, increase heart rate, oxygen consumption and the level of basal metabolism, raise blood pressure [9]. Activation of protein synthesis (including enzymes) has a special place, the capture of calcium ions from the blood increases, the processes of glycogenolysis, lipolysis, proteolysis are activated, the transport of glucose and amino acids into the cell increases, heat production increases [9;10]. In low concentrations, thyroid hormones have an anabolic effect on protein metabolism, increase synthesis and inhibit their decay, causing a positive nitrogen balance. In high concentrations, thyroid hormones have a strong catabolic

effect on protein metabolism, causing increased protein breakdown and inhibition of their synthesis, and as a result, a negative nitrogen balance [10]. The most frequent manifestations of the disease are the following: weight loss, decreased appetite, muscle weakness, tachycardia, rapid development of heart failure and cardiac arrhythmias in the form of atrial fibrillation, depression [9; 11].

The aim of the study was to determine changes in protein metabolism in patients with purulent surgical wounds suffering from thyrotoxicosis.

Materials and methods:

A retrospective analysis was performed in the number of 60 examined patients. These patients were divided into two groups. The first group included patients (n=37) with purulent wounds of various localizations without thyrotoxicosis. In the second group there were patients (n=23) with purulent wounds on the background of thyrotoxicosis.

The obtained research data were analyzed and processed using standard statistical methods of correlation analysis.

Results and discussion

With an increase in thyroid-stimulating hormone, total protein and total bilirubin decrease ($r = -0.3$, $p < 0.05$), and with an increase in T4 and slags in the blood (urea and creatinine: $r = 0.3$ $p< 0.050$; $r = 0.4$, $p < 0.05$, respectively). In general, the data obtained correspond to the main links in the pathogenesis of thyrotoxicosis.

Data analysis revealed in patients both direct and inverse dependence of metabolic parameters on the level of hormones TSH and T4 in the blood, which corresponds to the literature data.

Protein metabolism. There is a direct relationship between the level of T4 and the indicators of protein metabolism (urea, creatinine, total protein), and an inverse relationship with TSH.

Comparative dynamics of PC indicators for Mazurik (protein + exudates) and wound healing in 1-2 groups of patients (Table 1).

Table 1. Comparative dynamics of indicators

Patients groups	total protein in the blood g/l	Protein exudate g/l	PC by Mazurik	Transition to phase II (day)	Transition to phase III (day)
I-gr (n=37)	81,2	46,3	1,4	6	13
II-gr (n=23)	57,5	56,5	1,0	9	17

In persons of the second group suffering from thyrotoxicosis, the total blood protein sharply decreases to 57.5 g/l, and the loss of protein with exudate from the wound increases, which is 56.5 g/l. Whereas in the first group, compared with the second, the level of these indicators remains within the normal range.

As a result, on day 6, the transition of the wound process to the second phase occurs, and on day 13, the transition to the third phase of healing in the first group of patients. In the second group of patients suffering from thyrotoxicosis, the healing time of the wound slows down. As can be seen from the table, the transition to the second phase occurs on day 9, and the transition to the third phase of healing on day 17. All this is due to the negative effect of hormonal disorders on the wound process in thyrotoxicosis.

Thus, in persons suffering from thyrotoxicosis, significant changes in metabolism occur. In particular, this applies to indicators of carbohydrate metabolism (glucose), protein (urea,

creatinine, total protein) and fat (cholesterol, HDL, LDL, weight loss). Such shifts can be explained based on the influence of thyroid hormones on metabolic processes in the body. This in turn negatively affects the healing of the wound process. This is mainly reflected in the slowing down of wound healing 2-3 days later than in patients with purulent wounds without thyrotoxicosis.

Conclusions

1. Indicators characterizing blood protein and loss of protein with exudate from the wound by Mazurik are closely related to the levels of TSH and T4 hormones in the blood.
2. The time of wound healing in patients with thyrotoxicosis is much slower compared to patients with purulent wounds without thyrotoxicosis.
3. It is necessary to further develop ways to correct protein metabolism disorders in patients with purulent wounds on the background of thyrotoxicosis together with an endocrinologist.

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