SUMMARY

Despite the downward trends, stomach cancer remains a common malignancy with poor prognosis. Not only late diagnosis or extensive surgery contributes to this, but also co-occurring malnutrition and immune failure. Malnutrition and impaired immune system contribute to a high percentage of complications and postoperative mortality.

The supply of nutrients with immunomodulatory effects such as arginine, glutamine or ω-3 fatty acids in nutritional therapy may improve the host's immune response, as well as contribute to the improvement of surgical treatment results. The aim of the study was to analyze body composition using the electrical bioimpedance method in patients with gastric cancer. Another task was to assess the body composition of patients in various models of preoperative immunonutrition using oral industrial diets and whether preoperative immunonutrition had an impact on early results of surgical treatment.

The study included 60 patients with stomach cancer and 30 healthy volunteers who were the control group. One of three models of preoperative immunomodulatory nutritional treatment based on oral industrial diets was used in the examined patients before surgery. Patients were randomly assigned to one of three groups receiving pre-operative immunonutrition. Group I received oral glutamine, Group II oral ω-3 fatty acids, Group III oral arginine enriched with ω-3 fatty acids and nucleotides. Preoperative immunonutrition was used from 7 to 14 days (on average 10.5 days). Patients were determined body weight, percentage of unintentional weight loss and BMI was calculated. The body composition of patients was assessed twice, based on the bioimpedance method, and muscle strength in the non-dominant hand was measured using a hand dynamometer. The measurement took place before the start of nutritional treatment, and after its completion on the day of surgery.

Body composition analysis showed a significant decrease in muscle parameters, total water content, lean body mass parameters and impedance values in the patients compared to the control group. After the completion of preoperative immunonutrition, a significant improvement in muscle strength in the non-dominant hand and percentage of intracellular water was obtained in Group III. A significant increase in body weight was also obtained in Group I. The analysis of postoperative complications did not show statistically significant differences. Percentage of serious complications 35% of patients from Group I, 20% from

Group II and 20% from Group III. Six (10%) patients died within 30 days of surgery, two from each group of patients. There were no intraoperative deaths in the examined patients.

Along with the development of stomach cancer, there are changes in the body composition of patients consisting in a decrease in muscle parameters, total water content, loss of lean body mass and dry body mass, as well as an index of lean body mass. The reflection of changes in body composition is a decrease in electrical conduction parameters in the form of impedance, resistance, reactance and phase angle disturbances. The analysis of body composition by means of electrical bioimpedance in patients with gastric cancer requires consideration of many individual characteristics of the examined patients, as evidenced by the higher percentage of women than men with loss of muscle mass and strength. The applied preoperative immunomodulatory nutritional treatment did not improve the examined parameters of body composition, but protected against their further decline. Nutritional treatment with an oral industrial diet based on arginine, ω-3 fatty acids and RNA nucleotides allows improvement of muscle strength in patients with stomach cancer. None of the models of preoperative immunomodulatory nutritional treatment used achieved a significant reduction in the number and severity of postoperative complications.