INTRODUCTION

Obesity is considered a civilization disease of the 21st century which brings a threat to the health and life of highly developed societies. Currently, it is one of the main public health problems in the world, due to the health effects, range and rapid increase in its frequency (1-3).

Attempts to treat obesity conservatively by using low calorie diets, increased physical activity or pharmacotherapy are insufficient in some patients to achieve
significant, permanent weight reduction. More frequently, among patients previously treated conservatively without an effect, surgical treatment is applied, which results in greater loss of body weight, durability of the effect and a more significant improvement in the treatment of obesity-related diseases (4). Adequate nutritional preparation of the patient in the pre-operative period is one of the factors determining the effectiveness of surgical treatment of obesity.

REVIEW

According to international and Polish recommendations in the field of bariatric and metabolic surgery, the best results of surgical treatment of obesity are obtained if the time of preparation of the patient for the procedure lasts at least 3 months, and optimally 6-12 months. At this time, it is recommended to have at least 3 visits to the doctor coordinating bariatric treatment (surgeon) or other specialists who are part of a multidisciplinary team (5, 6). Proper preparation of the patient allows optimization of treatment of diseases resulting from obesity and comorbidities, and thus, reduces the risk of untoward events in the perioperative period (5, 7-9). In addition, it allows assessment of the patient’s motivation and willingness to cooperate and participate in long-term post-operative control. An essential element of effective surgical treatment of obesity is the patient’s cooperation with a dietician not only in the postoperative period, but also at the pre-operative assessment stage and preparation for surgery (10-12).

Pre-treatment dietary proceedings should include a detailed assessment of the current diet, assessment of nutritional status, determination of the weight reduction plan, nutritional education, as well as constant control of the effects of the process of looping weight (11, 12).

The assessment of the diet is aimed at learning about the current eating habits of the obese patient, including the number and frequency of meals consumed, the size and composition of individual meals, the frequency of consumption of various groups of food, its dietary preferences, culinary techniques used during the preparation of meals. In addition, all weight reduction attempts and their effects should be discussed with the patient. A precise analysis of the diet allows the dietician to identify and correct the nutritional mistakes made by the patient, which significantly influenced the increase in body weight or were the cause of failure during attempts to lose weight.

The results of own study and other authors, indicate that the diet of obese people, despite high energy value, is characterized by low nutritional density, which results in food deficiencies (13-15). Numerous studies provide evidence that latent food deficiencies, especially vitamin D3, calcium, iron or folic acid, are very common in people with obesity (16-18). In connection with the above, the patient’s preparation for the surgical procedure should also include the diagnosis of the nutritional status of the patient. In addition to the basic anthropometric measurements (body weight, waist circumference, hip circumference), the body composition and blood biochemistry tests should be performed to identify nutritional deficiencies, properly compose the patient’s diet, and select the appropriate supplementation (if required). The results of the body composition analysis will also serve as a reference in assessing the effectiveness of the patient’s diet both in the pre-operative and post-operative period.

The role of a dietician is to develop a plan to reduce body weight and to define a measurable goal (loss of 5-10% of the initial body weight) that the patient should achieve. It is beneficial to designate a few small goals for the patient, the achievement of which will allow them to develop and consolidate new, healthy eating habits. The change of the current way of nutrition should start with learning how to regulate the consumption of food. During the day, the patient should eat 5 regular meals, at intervals of 3-3.5 hours. Especially important in daily nutrition is the consumption of breakfast for an hour after waking up. Supper should be eaten about 2 hours before bedtime. Regular consumption of food with low energy density accelerates metabolism, prevents fluctuations in blood glucose concentration, and thus prevents hunger attacks and the desire to eat something sweet between meals (19). It was shown that people who aim at losing weight regularly consuming breakfast had lower body mass in comparison with people who did not eat breakfast.

In addition, the consumption of a breakfast containing higher amounts of protein and dietary fiber helps increase the feeling of satiety and reduce the number of kilocalories and contributes to lowering the energy value of the all-day diet (20-22). It should also be recommended for patients to reduce the portions of meals, do not eat between meals, avoid eating at night. It should be made clear to the patient that meals should be consumed without haste for at least 20 minutes, and each bite should be masticated (20-30 times). In addition, the patient should avoid additional sugar, eating candy, sweet drinks, as well as fast food. The current way of preparing meals should also be modified. Dishes should be prepared using such cooking techniques as: boiling, steaming, grilling, baking in a foil or sleeve.

Each patient qualified for surgical treatment of obesity should use a diet prepared by a dietician, nutritionally balanced low-energy diet for a period of at least 3 months before the planned surgery (optimally for 6 months) (6). Properly composed diet provides particular nutrients in amounts covering the patient’s needs, which is a necessary condition for compensating food deficiencies, common in obese patients. The energy value of the diet should be selected individually for each patient in such a way as...
to reduce the energy supply by 500-1000 kcal in relation to the total energy demand (7). According to the assumptions of a low-energy diet, protein intake should amount to 1 g/kg of body weight. High-quality biological protein (skim milk, lean meat, fish, poultry, cottage cheese, eggs, and lean chicken meat) should be in three main meals. Fats should cover 25% of the energy value of the diet.

It should be remembered that a significant part of the fat in the daily food ration comes from protein products and the same amount of fat added in the form of fat products (vegetable oils, optionally soft gob-margarines) should not exceed 25 g. Diet should exclude food containing large amounts of saturated fat and cholesterol (butter, bacon, lard, fatty meat, such as cork, pork shoulder). Carbohydrates should supplement the energy value of the daily food ration. It should be emphasized that it is particularly important to eat food that provide complex carbohydrates, such as groats, wholemeal bread, brown rice, wheat bran, oatmeal or other cereal flakes. The products which are the source of simple sugars (sugar, sweets, high-sweetened jams, sweetened fruit juices) are absolutely contraindicated.

The diet of people aiming at loosing weight should also contain legume seeds, large amounts of vegetables (at least 500 g) and slightly fewer fruits (200-250 g). They are a great source of vitamins and minerals, as well as dietary fiber. The recommended daily intake of fiber is 30-35 g (22). The salt consumption should be limited to 5 g/day (1 flat teaspoon), especially for people with hypertension. The amount of intaken liquids (preferably still mineral water) should be at the level of 1500-2000 ml/day, however, it should be remembered that in the case of patients with hypertension and edema, the supply of fluids should be limited.

It should be emphasized that the effectiveness of dietetic treatment of obesity depends on the reduction of the energy value of the diet, and not on the mutual proportions of particular macronutrients (22, 23).

Patients qualified for surgical treatment of obesity very often have an enlarged and fatty liver, which complicates the technical aspects of surgery, thus, extending the time of surgery and increasing the risk of complications (24). The incidence of non-alcoholic steatohepatitis (NASH) in this group of patients is 35-88.6% (25-27). If NASH was diagnosed at the pre-operative stage of the patient’s health assessment, then it may be beneficial to introduce a low-energy diet (LCD) or a very low-energy diet (VLCD) before the bariatric procedure to reduce the liver volume and, thus, reduce the risk of postoperative complications. The analysis of the available data shows that the duration (2-12 weeks) and energy value of the diet (456-1100 kcal) varied depending on the preferences of the center dealing with surgical treatment of obesity (28-33). In patients taking pre-operative VLCD diet, the mean reduction in liver volume was 12-20% and was dependent on the duration of the diet. From the meta-analysis conducted by van Wissen et al. (34), the mean duration of the VLCD diet (average energy value of 729 kcal) was 6.4 weeks (2-12 weeks) and contributed to liver reduction by 13.6%. The meta-analysis also shows that the low-calorie diet contributed to a reduction in liver size by an average of 2.4% per week, therefore, it is recommended to use it for at least 4 weeks before surgery (34).

According to the recommendations of The British Obesity and Metabolic Surgery Society (BOMSS), a low-energy “conventional” diet – traditional (1000 kcal), VLCD (800 kcal) industrial diet and a dairy diet can be used to reduce liver size. Conventional diet is a high-protein, low-carbohydrate diet (max. 90 g/day) and low-fat diet (35). Its use from a dietitian requires accurate calculation of the amount of energy and individual macronutrients in the daily food ration, and the patient’s meticulous weighing of the products during the preparation of meals and eating the whole portion of the meal planned. It should be emphasized that diets with an energy value below 1000 kcal are deficient in vitamins and minerals. They may lead to a worsening of nutritional deficiencies, therefore, supplementation with a multivitamin should be considered. Industrial diets are specially prepared products used in diets with limited energy content to reduce body weight. They are most often consumed in the form of cocktails with a strictly defined energy value and optimal content of standard value protein, neccessary unsaturated fatty acids, vitamins and minerals. They are ready for immediate consumption after they have been dissolved in water. VLCD diets should be used under the supervision of a physician due to the very low energy supply (often below 800 kcal). In turn, the dairy diet consists of consuming only semi-skimmed milk and yoghurts in the amount of 2 liters (about 800-1000 kcal) daily divided into 4-5 meals. It is a deficient diet and requires additional vitamin and mineral supplementation as well as fiber (35, 36).

Also worth mentioning are the results obtained by Iannelli et al., who assessed the influence of supplementation with omega-3 acids (without the need for a low-energy diet) on the volume of the liver. He proved that a 4-week supply of omega-3 acids in an amount of 1500 mg/day contributed to a reduction in the size of the left lobe of the liver by 20% (37). The results of the work are promising, however, require confirmation and conducting randomized studies on a larger group of patients, but it seems to be reasonable to consider supplementation with omega-3 acids in the pre-operative period. Currently, the low-energy “conventional” diet is the preferred method used to reduce the volume of the liver (34, 36).

An essential element of preparing an obese patient for surgical treatment is also nutritional education. It should include information on the principles of nutrition after bariatric surgery, especially in the early
post-operative period (diet progression, eating and drinking techniques). The patient should be made aware of the necessity of supplementation of vitamins and minerals, as well as protein supplements. In addition, nutritional complications after the procedure (nausea and vomiting, dehydration, food intolerance, constipation, hair loss, reactive hypoglycaemia and ‘dumping’ syndrome) and ways of dealing with them should be discussed. As part of nutrition education, attention should be paid to the need to check on the labels of food products, their composition, energy value, and content of individual nutrients, which promotes the right choice of nutrition (38).

CONCLUSIONS

Summing up adequate nutritional preparation of the patient affects the course and effectiveness of surgical treatment of obesity. The nutritional education carried out by the dietician in the pre-operative assessment process and analysis of the patient’s motivation to comply with dietary recommendations avoids post-operative failure.

BIBLIOGRAPHY