COMPARISON OF THE NUTRITIONAL NEEDS OF HEALTHY INDIVIDUALS AND DIALYSED PATIENTS

PETRA POKOROVÁ, DIS

B. BRAUN AVITUM | PRAHA - ČERNÝ MOST | CZECH REPUBLIC

INTRODUCTION

For most of the patients, dialysis is a stressful situation. They have to get used to a new environment, come to terms with the need for long-term regular dialysis treatments and significant concerns also arise from complying with the necessary dietary measures.
Their diet must not only meet the nutritional requirements of the human organism, but it should also enhance a positive emotional perception.
In other words: food brings to the body not only nutrients, but also positive sensations associated with it. Feeling of satiety, perception of colour, aroma and flavour, induction of calm and a good mood.
In the patient, diet can evoke a negative attitude towards food, which brings a number of complications. One of them is stress, which negatively affects the metabolic processes in the body and thus it contributes to the development of obesity and other diseases. Furthermore, the patient fears failure, in terms of not being able to follow all the diet recommendations, resulting in deterioration of the patient's condition. Therefore, a sensitive approach by the nutritionist and the way the diet is presented to the patient play a very important role.
What are the differences in eating habits in healthy individuals and dialysed patients?

AIM

Numeric comparison of the body requirements on the diet of healthy individuals and dialysed patients with the intention to prove that the intake of the main nutrients differ only in the loss of nutrients during dialysis and inadvertent underlying diseases such as malnutrition prevention. Awareness of these facts may help patients eliminate the fear of failing to adher to the dietary requirements.
When putting the diet plan together one must take into account the age, gender, social and economic conditions of the individual as well as hereditary predisposition, current health status, physical activity and emotional state.

INDIVIDUAL APPROACH AND RECOMMENDATIONS FOR THE RATIONAL DIET

List of essential nutrients: proteins, fats, carbohydrates, vitamins, minerals, trace elements, fluid intake

ENERGY

The energy intake fully depends on the basal metabolic rate (BMR) plus the energy needed for regular activities (27% in sedentary jobs, 30% in sedentary jobs combined with a slight physical activity, 35-40% in physically active jobs), energy output during physical activities and energy that the body needs to process ingested food (10%).

- BMR for women: 655 + (9.56 x weight in kg) + (1.85 x height in cm) - (4.68 x age in years)
- BMR for men: 66.5 + (13.75 x weight in kg) + (5 x height in cm) – (6.76 x age in years)

he best source of energy for the body are fats and carbohydrates contained in the diet. Their distribution into individual portions during the day is always individual. It seems, that in terms of health it is not absolutely necessary to eat 6 times a day. Individuals who eat three times a day also thrive well. The total consumption of nutrients remains the same.

Distribution of main nutrients in a healthy individual with optimal weight:
Proteins – 15 %, Fats – 30 %, Carbohydrates – 55 %
One gram of protein or carbohydrates is a source of 17 kJ of energy (= 4 kcal) and 1 g of fats of 38 kJ of energy (=9 kcal).

EXAMPLE NO. 1:
A healthy individual: a woman, 70 kg, height 170 cm, age 58 years, sedentary job, taking irregular strolls

- BMR = 655 + (9.56 x weight in kg) + (1.85 x height in cm) – (4.68 x age in years)
- BMR= 655 + (9.56 x 70) + (1.85 x 170) – (4.68 x 58)
- BMR = 1,367.26 kcal = 5,742 kJ
- Total energy intake: 1,367+ 30% (410) + 10% (136.7) = 1,914 kcal = 8,039 kJ
- Recommended protein intake while maintaining the current weight: 72 g
- Recommended carbohydrate intake while maintaining the current weight: 263 g
- The recommended intake of fat while maintaining the current weight: 64 g

EXAMPLE NO. 2:
A patient on dialysis: a woman, 70 kg, height 170 cm, age 58 years, a partial disability pension, taking irregular strolls
Nutritional recommendations for dialysed patients:
Intake of full-fledged proteins of about 1.2 g/kg/day. Energy of 126 to 146 kJ/kg/day, of which 50-60% of the total energy requirements is covered by carbohydrates and 25-30% by quality fats provided that the fluid intake as well as the content of phosphorus (P), potassium (K) and sodium (Na) in the diet are reduced.
Distribution of the main nutrients while maintaining the current weight: Proteins 15-18 %, Fats 30 %, Carbohydrates 52 - 55 % according to the current health status.
During each dialysis the patient loses about 900 kJ, I.e. an average of 386 kJ per day according to the progress of the disease, type of dialysis equipment, length of dialysis ... Total energy intake must compensate this loss, i.e. 8,039 kJ + 386 kJ = 8,425 kJ/d. The extra energy is added in form of carbohydrates or fats according to the patient's weight.
The recommended protein intake while maintaining the current weight: 86 g
Recommended carbohydrate intake while maintaining the current weight: 249 g + 23 g (energy loss during dialysis) = 272 g
Recommended fat intake while maintaining the current weight: 64 g

Distribution of energy nutrients in dialysed patients varies and it changes depending on the current health status of the individual patient. In case of an underlying disease e.g. in case of a healing defect or infection it is still necessary to increase the protein intake.

Healthy individual/day	Dialysed patient/day
Energy intake: 8,039 kJ	Energy intake: 8,425 kJ
Protein intake: 72 g	Protein intake: 86 g
Carbohydrates intake: 263 g	Carbohydrates intake: 272 g
Fats intake: 64 g	Fats intake: 64 g
Potassium intake: 2,500-400 mg	Potassium intake: 1,500 -2,500 mg according to the diuresis
Phosphorus intake: 1,200 mg	Phosphorus intake: 800-1,000 mg

CONCLUSION

Although there is enough data on eating habits, patients referred for dialysis often have poor eating habits. The nutritionist has a very difficult task - to teach them to eat properly.
The study numerically evaluated eating habits as one of the ways to prove that the diet of dialysed patients differ only slightly from the rational eating of a healthy person. Fears of mismanagement of dietary needs during dialysis are therefore not justified.
Based on the calculations, it is clear that the diet of healthy individuals and dialysed patients differ only in terms of some of the nutritional parameters, in particular in protein intake, which must be compensated due to the loss during the dialysis or due to underlying diseases.
Carbohydrates and fats remain a variable component of the diet, and they always reflect the current health status of the patient with regard to the quantity of phosphorus and potassium in the diet.
The human body benefits the most from the intake of fresh and quality food. Industrial processing changes the structure, appearance as well as the taste of the food, which due to added preservatives (E) becomes risky for the dialysed patient in terms of the disproportionate increase in phosphorus and salt intake.

Note: Numeric description of the nutritional needs of an individual can significantly differ from the real needs. The Human approach and individualised care cannot be replaced by any numbers.

B. Braun Avitum s.r.o. | www.bbraun-avitum.cz