

Nutritional supplementation in dialysed patients suffering from malnutrition

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Malnutrition = undernutrition = a long-term deficiency of any of the basic food components, in particular of proteins, fats and/or carbohydrates.

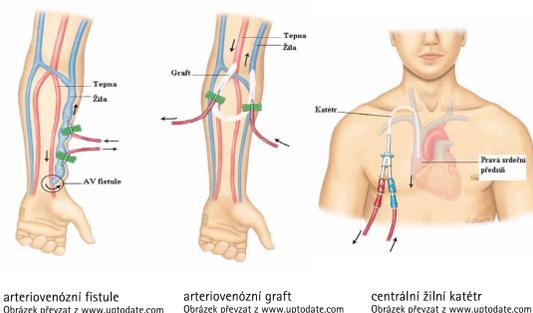
There are several factors that jointly contribute to the development of malnutrition in dialysed patients:

- 1) Protein-energy malnutrition is related to **insufficient nutrition** (particularly with low intake of proteins, carbohydrates and fats in food) caused for instance by a disorder of taste and smell, uremic toxicity in insufficient dialysis, metabolic acidosis, change in hormone levels, drug overuse, long-term hospitalisation, economic and social impacts on food quality.
- 2) In connection with an inflammation – MIA syndrome (inflammation, atherosclerosis, undernutrition) – a higher CRP value – proteins are utilised in the fight against the infection.
- 3) Loss of nutrients due to dialysis, proteinuria

Dialysis principle

Haemodialysis is one of the most common treatment methods in patients with insufficient kidney function. By way of many factors (for instance: dialyzer size and type, size of dialysis needles, blood flow rate, composition of the dialysis solution, applied dialysis method, dialysis duration) dialysis removes uremic toxins and water from the patient's body. This allows the body to remove creatinine, uric acid, potassium and phosphorus. Nonetheless, substances that are necessary for the body to function, namely amino acids, vitamins and some minerals, leave through the same path. During every dialysis, the patient loses about 2 g of proteins and about 900 kJ. In the case of dialysis conducted 3 times a week, the losses may amount to as much as 24 g

of proteins/month and as much as 10,800 kJ/month. The dialysed patient is exposed to an increased risk of malnutrition, even though the loss of nutrients through dialysis is not the main cause of malnutrition. Studies show the occurrence of malnutrition is as high as 40% among dialysed patients. This fact needs to be taken into account in the nutrition of each dialysed patient.



Recommendations for the nutrition of a dialysed patient

Intake of adequate proteins ca. 1.2 g/kg/day. Energy 150 kJ/kg/day, out of which 50–60% of the total energy needs to be covered by the intake of carbohydrates and 25–30% by high-quality fats. All of this is assuming a lowered intake of fluids, phosphorus (P), potassium (K) and sodium (Na).

Diagnostics

Analysis of the present diet – representation of individual nutrients, BMI calculation

The common indicators include a reduced level of serum albumin < 35 g/l, prealbumin 0.3 g/l, lower cholesterol level, changes of the anthropometric and biospectroscopic measurement values are apparent (loss of muscle mass), unintentional loss of weight by as much as 10%.

Malnutrition does not arise overnight, it develops gradually. It is ideal to prevent it for example by a continuous monitoring of the diet, monitoring weight loss, regular monitoring of nutrition parameters, ... A person suffering from malnutrition may even be apparently overweight! At first, the patient has no health problems. The consequences of the long-term insufficiency of nutrients include for instance reduced immunity, cardiovascular difficulties, myasthenia, thermoregulation disorders, problematic healing of wounds and so on. During the dialysis treatment, patients suffer from a loss of appetite, distaste for meat consumption. We can help in this respect by highlighting the taste of the meal for instance by fresh herbs, and by using adequate technological processing of the food. We take advantage of quality proteins from the egg white. It is ideal to drink sipping during the day already during these initial symptoms.

Enteral nutrition

If common food is not sufficient to cover the organism's needs, the missing nutrients are temporarily supplemented by drinking an adequate sipping along with common food. The usage period depends on the degree of the developed malnutrition.

Food supplements are prescribed by a physician – a holder of a F016 license issued by the Czech Medical Chamber for artificial nutrition and metabolic care or a dialysis centre physician. The insurance company's criteria are very stringent and do not suffice for the early identification of malnutrition. BMI < 20kg/m² or a reduction in weight during last 6 months >10% or serum albumin < 35 g/l or serum prealbumin < 0.3 g/l. The effectiveness of administration of sipping is checked after 6 weeks – the serum albumin level needs to increase by 5 %, otherwise this treatment is not covered by public healthcare.

Nutricomp Drink Plus, a product of B. Braun which is available in several flavours, is an adequate food supplement for dialysed patients. With a relative low amount of fluid (200 ml), we supplement energy and proteins with a lowered potassium and phosphorus content. The preparation is suitable also for patients suffering from diabetes mellitus and coeliac disease. It is available in four flavours – chocolate, vanilla, strawberry, banana.



Sipping	E	B	T	S	K	P
Nutricomp Drink Plus (B. Braun) 200ml	1260 kJ	12	10	40	340	120

In addition to common drinking, sipping may be used as a replacement for milk, i.e. in coffee, purees, sauces. Mix with fruit and prepare a tasty and nutritious cocktail. In summer, we can freeze it in cubes and suck on them during the day. The drink may be cooled but also heated to about 60 °C while preserving the nutritional value.

Sipping by dialysed patients

The effectiveness of the administration of the Nutricomp Drink Plus product within the framework of the dialysis treatment three times a week was investigated in ten patients in the early stage of malnutrition (cancer patients). On average, the values of serum albumin reached approx. 30–34 g/l. The patients showed signs of loss of appetite up to resentment of a meat diet, increased fatigue and a slight loss of weight.

Complications associated with the digestive system occurred in patients during the first days of the use. Patients complained about diarrhoeal stool on the day of use. They rejected to continue using this food supplement due to this complication. It is not definitely proved that the diarrhoea was caused by the sipping. When searching for the cause, an inadequately selected food product served during the day was discovered.

Most patients experienced a recovery of their appetite within two months as of the commencement of the supportive therapy, their weight increased slightly and an increase in serum albumin by up to 2 g/l was also reported. Patients felt better in general.

In patients with an increased value of CRP the effect was not so significant.



Conclusion

The application of sipping is important already in the initial stages of malnutrition in dialysed patients. Over the course of two months the nutritional condition in most patients improved. We can effectively reduce the risk of malnutrition development by early intervention. Therefore it is necessary to monitor the nutritional conditions of patients using available and well-proven methods.