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NUTRITIONAL TREATMENT IN CHRONIC KIDNEY DISEASE

This article looks at the dietary management of chronic kidney disease (CKD), describing the dietary approach commonly used in Italy and some other European and Non-European countries. The use of low protein foods in the management of this condition is not routinely used in the UK. Here we look at this approach, along with current findings and evidence to support its use.

CKD is a progressive and irreversible loss in kidney function over a period of months or years. The conservative treatment in the early stages (I-III) consists in pharmacological as well as nutritional therapy, with the aim to preserve the kidney function as much as possible over time. Renal replacement therapy, namely dialysis or renal transplantation, is required in the terminal stages of the disease (IV-V) and comes along with a reduced quality of life on one hand and an increased mortality rate on the other.

Environmental risk factors for the development of CKD, like obesity, diabetes mellitus and hypertension, have increased significantly all over the world in the last few decades.^{9,10} Surveys report a wide range of global CKD prevalence in all of its five stages, varying from approximately 5-13% in the general population. Besides methodological issues, both genetic and environmental factors, such as eating habits, may play a major role. Recent observations have shown a variability of CKD trends over time, where prevalence is stable, or even decreasing in some countries.⁶

RATIONALE AND AIMS OF NUTRITIONAL TREATMENT

In the 1960s, dialysis was not available as a valid treatment option, which is why dietary recommendations in terms of protein reduction and adequate energy supply were the only options to manage CKD

symptoms and to prolong survival.⁸ After the Modification of Diet in Renal Disease (MDRD) study in the early 1990s, which showed that nutritional treatment is not as effective concerning the retardation of disease progression as initially expected, its application decreased in most countries, especially in those where dialysis techniques became more and more efficient.¹¹ Nevertheless, there is strong evidence to support the efficacy of nutritional treatment in CKD in predialytic patients in order to protect the residual renal function and to slow down disease progression. Consequently, dialysis initiation can be postponed by approximately one to two years, increasing quality of life for the patient and reducing costs for the sanitary system.^{7,13}

Nutritional treatment is efficient for metabolic and fluid control, as well as for the prevention and correction of metabolic complications like aciduria and proteinuria. A primary aim of nutritional recommendations is the prevention of protein-energy malnutrition in advanced CKD, ensuring a balanced protein-energy intake via an appropriate food choice.²

DIETARY RECOMMENDATIONS

Clinical practice guidelines for the conservative treatment of CKD focus predominantly on the quantity of nutrients, recommending an appropriate energy intake (30-35kcal/kg body weight per day) and restrictions of

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protein (0.6-0.8g/kg body weight per day) and minerals (sodium, potassium, phosphorus).^{4,3,14}

Dietary restrictions, together with economic and social factors, may induce a suboptimal quality of the diet. In fact, potassium restriction can result in a reduced consumption of fruits and vegetables, which are also rich in minerals and vitamins and may, therefore, lead to insufficient nutrient intake. In addition, protein restriction may cause a loss of energy intake, especially if dietetic counselling is missing to give important recommendations about appropriate food choice and portion sizes.

Protein quality plays an important role when it comes to the risk management of cardiovascular diseases as a frequent CKD complication. In observational studies, the Mediterranean Diet, which is rich in fruits and vegetables, fibre and unsaturated fats (olive oil, fish) with moderate alcohol consumption, is associated with increased survival and slower disease progression in CKD patients.^{9,12} Consequently, an appropriate consumption of fish and vegetable oils, like olive oil, should be recommended to renal patients for their high content of unsaturated fatty acids. On the other hand, red meat and foods rich in saturated fats (butter, cheese, cold cuts, pastries and cakes) should be reduced because of their negative impact on the development of cardiovascular diseases.⁴

ROLE OF LOW PROTEIN FOODS

Low protein versions of products, like pasta, bread, bread substitutes, snacks and sweet products, have been developed for renal patients in conservative treatment are mainly based on starch, in order to obtain a very low protein content. Moreover, they are low in sodium, potassium and phosphorus and

represent a good source of energy. Some of them are rich in fibre, which might help in managing blood glucose levels and to increase the feeling of satiety. These products can replace standard staple foods rich in protein of low biological value, allowing the intake of small quantities of animal proteins and providing a good source of energy.^{1,2,5}

Especially in the advanced stages of CKD, these products may be a valid option for the nutritional therapy due to their high quality nutritional profile. They help to reduce disease progression and to control some complications such as protein-energy malnutrition. Furthermore, they are a valid option also in diabetic nephropathy and in elderly patients, where a high energy intake is considered of supreme importance.^{1,3}

There is huge variability in the availability of low protein foods throughout the world and, consequently, in their application in CKD patients. In most Italian regions, low protein foods for CKD patients on conservative treatment are available and will be covered by the health system up to a defined monthly limit, similar to that for prescribed foods here in the

UK for coeliac disease and metabolic conditions such as PKU. Italian healthcare professionals promote the application of the nutritional therapy in CKD patients, facilitating also patient adherence to the dietetic recommendations. In fact, Italian healthcare professionals have a longstanding tradition in implementing nutritional therapy with the use of low protein foods in the conservative treatment of CKD patients.²

CONCLUSION

Nutritional treatment has always been an important pillar in the management of CKD patients. Numerous studies demonstrated its beneficial effects on metabolic control

and reduction of disease progression. Nevertheless, the application of dietary treatment in the conservative therapy of CKD varies widely in different countries and even in different centres. The expertise of healthcare professionals, including specialist dietitians and/or their availability, the generally poor dietary adherence in patients, the varying availability of specialist foods together with economic factors, may all play a role in the variable approaches to treatment. Nutritional guidelines and clinical practice should always focus on dietary quality and achieving a balance where quality of life is also considered. This applies to both primary and secondary CKD preventions.

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