INSTRUCTING HAEMODIALYSIS PATIENTS AND THEIR RELATIVES LEADS TO ELEVATED QUALITY PROTEIN INTAKE

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INTRODUCTION: Protein energy malnutrition is often observed in patients with end-stage renal disease. In 1960, Scribner *et al.* reported that malnutrition could lead to complications in patients suffering from chronic kidney disease. Studies have shown that malnutrition is common in haemodialysis (HD) patients and that malnutrition is a major risk factor for mortality and morbidity. Lowrie *et al.* have found that mortality and morbidity rates of dialysis patients with lower levels of blood urea nitrogen and albumin (ALB) are higher compared to those with higher levels. Metabolic acidosis, insufficient dialysis, losses during dialysis, bioincompatibility, hormonal changes and anaemia are among the main factors effecting nutrition in patients with chronic kidney disease. Other such factors are poor diet, gastropathy, and psychosocial and socioeconomic factors. The essence of a balanced diet is the intake of as much protein and calories as needed. Insufficient protein intake, combined with the loss of amino acids and proteins into the dialysate could have detrimental effects on patients. HD patients lose approximately 13 g of protein in the form of 5-8 g of free amino acids and 4-5 g of peptides during each dialysis session. A healthy adult needs to consume a minimum of 0.75 g/kg of protein daily. Nitrogen balance studies indicate that this value should be 1.2 g/kg for HD patients. It has been shown that protein intake values lower than this figure lead to a negative balance of nitrogen. The protein intake should be in the form of animal protein high in biological quality. Furthermore, sufficient calorie intake is also essential in order to prevent the use of protein intake as energy source via gluconeogenesis. Otherwise, positive nitrogen balance cannot be achieved despite high protein intake.

METHODS: 26 male and 44 female (n=70) HD patients in treatment at the dialysis unit of Antalya Training and Research Hospital were included in this study. All the patients were low on the socioeconomic ladder and possessed green cards (a non-contributory health insurance scheme in Turkey). In 2015, the patients were given diet supplements high in quality protein on the days of dialysis sessions. The diet supplements were administered under dietician supervision, with approval from hospital administration. The supplements consisted of two hard-boiled eggs in the morning (the patients were persuaded to eat at least the whites of two eggs in every session), other breakfast foods, meals containing meat at lunch, and meringues (baked egg white and sugar). Consequently, the patients were able to consume foods rich in quality protein during HD sessions, which they could not otherwise consume at home. Meringues were especially instrumental in achieving positive nitrogen balance owing to the presence of biologically high-quality animal protein in egg whites and coexistent sugar that provides necessary calories, thereby preventing the use of proteins as energy source.

RESULTS: Mean levels of ALB, total protein (TP) and haemoglobin (Hgb), and mean Kt/V values of patients in 2014 and 2015-2016 were compared using paired t-tests. The increases in the levels of ALB (from 3.6 to 3.7 g/dL) and TP (from 6.56 to 6.88 g/dL), and in the values of Kt/V (from 1.46 to 1.58) were statistically significant ($p<0.05$). The levels of Hgb showed an increase from 11.01 to 11.23 g/dL, but this difference was not statistically significant. We conclude that the crucial element of the diet supplements that we recommend and serve to patients during HD sessions is not the quantity, but the presence of high quality protein, which improved the patients' quality of life considerably. Regularly instructing HD patients and their relatives allows monitoring of compliance with diet, as well as reduces the rate of mortality and morbidity.