Clinical Nutrition: Effect of nutritional counselling in the form of individualized meal plan on serum albumin level among hemodialysis patients- Suhair Abdalla Khalil Abdallah- Ahfad University for Women

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Abstract

Introduction:

Optimal nutritional status is a major issue in the long-term management of (HD) patients and is a prerequisite for better prognosis of HD patients. The Kidney Disease Outcomes Quality Initiative (KDOQI) recommends the use of standardized practices in renal nutrition as a central and integral part of the dietary management of end stage renal disease (ESRD) patients on HD. A dietitian with renal experience should be responsible for the on-going evaluation of patient's nutrition status and the development of plans for dietary care. This ensures appropriate assessment of the nutrition status and timely identification of patients at risk. Assessment of the nutrition status is therefore an integral part of the nutrition management. Several parameters should be evaluated together including history of weight loss, dietary protein and energy intakes, subcutaneous fat mass and muscle mass and body mass index (BMI), subjective global assessment (SGA) used by health officials to score protein–energy nutrition status and several biochemical markers (serum albumin, prealbumin, and transferrin) have been used to evaluate visceral protein stores. Of these, serum albumin has so far been the most commonly used. It is the one measure of total body protein, both muscle and visceral which is the most frequently used marker of protein status and is the standard recommended by KDOQI. To be used in assessing the nutritional status among CKD. It is a strong marker for the evaluation of malnutrition among HD patients. It is unlikely that a decreased albumin results in an increased in morbidity and mortality. Which has been shown for ESRD patients whose albumin is below 40 g/d, and result in an excess risk of death. Low albumin level is a solid analyst of humanity and illness among hemodialysis patients. It is surrogate markers of PEM which is common among ESRD patients on HD with an estimated prevalence of 10 - 70% and it undoubtedly contributes to increased risks of morbidity and mortality. It is compounded by the fact that these patients loose large amounts of protein in the dialysate fluid (which lead to hypo albuminemia among this group) (most previous studies showed that the amount of amino acids lost into the dialysate during one dialysis session can range from 4 to 13g. and do not consistently take the recommended amounts of energy and protein for ESRD patients on HD. They are in need of individualized meal plans but they rarely consult a dietitian. In other words, a special diet is needed for ESRD patients on HD. Recommended daily nutrients intake for an adult on HD are: protein 1.2 gm/kg body weight (50% of high biological value); energy for an adult < 60 years 35 kcal/kg and for an adult > 60 years or obese 30 kcal/kg; the minerals (mg/kg/day) - sodium 2 - 4, potassium 40 and phosphorous 17; fluids depends on fluids output + 500ml.

Serum albumin is the most commonly used malnutrition marker in clinical practice as hypo albuminemia is considered to be a malnutrition risk among the patients on hemodialysis and a strong predictor of death. Low serum albumin levels are due to low intakes of energy and protein or insufficient energy intake resulting in poor protein utilization.

Purpose:

This was a prospective, clinical trial hospital based (intervention) study to evaluate the effect of nutritional counseling in the form of individualized meal plan on serum albumin level among hemodialysis patients.

Methods:

The study was conducted on maintenance hemodialysis patients attending Dr Salma Hemodialysis & Transplant Center outpatient clinic, Khartoum. 134 adult patients (males & females) were divided into a test group (n=77) and a control group (n=57). The test group after nutritional counseling consumed individualized diets for a period of 6 months that provided adequate amounts of energy and protein according to the recommendations of the National Kidney Foundation whereas the control group sustained overwhelming their usual diets. Serum albumin was determined at baseline and every 2 months. Data were analyzed using SPSS.

Nutritional status assessment:

Intervention Eighty-three HD patients who were included in the study as test group received conventional nutritional counseling and individual meal plan to achieve adequate protein and calories intake. Monitoring was done

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during 6 months of follow up. The individual meal plan was designed and explained to patient and their families by the following ways:

Educational lecture: Educational lecture was given exclusively to the test group. It was presented by the researcher to the patients and their families during their dialysis session by using a data-show to educate the patients and their families on the nutritional needs to provide appropriate food with adequate calories and protein to the patients.

Presentation included all the important information needed to be known by ESRD patient on HD. It was concentrated on calorie and protein needed, fluids limitation, intake of sodium, potassium and phosphorus in foods. Information was provided in a simple way and was explained by pictures for more understanding.

Pamphlets: were prepared and distributed to all intervention group participants after the lecture and all the summary information that was presented was found in the sheet which the researcher called it as the over-all training sheet for renal patients on HD.

Individualized meal plans: Individual meal plan was designed individually to all intervention group participants after analysis of the full information that helped the researcher to conduct the meal plan. The meal plan was based on: patient's economic status, medical history, diet history, like and dislike, chewing and swallowing status, food allergies, blood investigation result, age, weight, height and sex. (Food exchange list was used to help patients for food substitutes if participant unable to follow the meal prescribed according to like and dislike or socio economic reasons). After calculation of all nutrients needed by each participant, individual meal plan for the whole week was designed by researcher, typed, organized, color printed and given to participant with full explanation of uses. The meals planned were designed only for intervention patients, whereas control patients continued to receive their usual care.

Results:

Demographic characteristic of the study sample: For the demographic characteristic of the study participants, test and control, Males represented a higher percentage than the females. The age group distribution of subject shows that most of the patients (46.3%) were in the active age group of 30 - 45 yrs. (49.4% test and 42.1% control). The majority (31.3%) had higher secondary school education (29.9% test and 33.3 % control), followed by 17.9% university graduates (23.4% test and 10.5% control), the rest were illiterate or with low educational level. Medical profile of the participants

The medical characteristics of the study: Participants are shown that 53.7% of the participant had hypertension (61.0% test and 43.9% control), while only 3.0% had diabetes mellitus and hypertension (1.3% test and 5.3% control) and the rest

43.3% did not have any comorbid disease (37.7% test and 50.9% control). The mean extents of dialysis eras were 57.08 ± 36.16 months for the together groups (61.77 ± 38.84 test and (50.75 ± 31.42 control group).

Serum albumin augmented progressively from 3.14 g/dl at zero to 4.32 g/dl at 6 months with test group. The study displays big alterations in accumulation of serum albumin level during the study with intervention group compared with control. The mean test group was (3.1, 3.3, 3.9 and 4.3) and the mean of control group was (3.2, 3.16, 3.19 and 3.84) in baseline, 2-4-6 months respectively.

Conclusion:

The study demonstrated that effective nutritional counseling rendered to maintenance hemodialysis patients in the form of individualized meal plans that provided adequate energy and protein was active in the switch and enhancement of serum albumin equal among these patients. Therefore, nutritious counseling by skilled dietitians is mandatory in renal units as part of the medical therapy management to reduce the incidence of hypoalbminemia among hemodialysis patients.

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