Appetite and nutritional status of chronic hemodialysis patients

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ABSTRACT

Protein-energy malnutrition is frequently founded in maintenance hemodialysis (MHD) patients. It is associated with a significantly increased risk of mortality and morbidity. Early recognition and appropriate therapeutic management are essential to improve the prognosis of these patients. The objective of this study was to determine if the state of appetite can be correlated with nutritional status. Patients and methods: A cross-sectional study was conducted in January 2013 in our dialysis unit. MHD patients for more than 03 months were included. Appetite was assessed according to the HEMO Study-five degrees. We considered stage 1 and 2 as normal and stage 3, 4 and 5 as fair appetite and correlate theses appetite states to demographic and biological parameters. Results: Fifty MHD patients (18 women and 32 men) were included. The mean dialysis average was 75.96 months. Diabetic nephropathy represents 36% of total patients. The appetite was normal in 58 % of the cases and fair in 42 % in the others. Mean Body Mass Index (BMI) was 22, 99 kg/m^2, mean serum albumin was 39, 16 g/l, serum préalbumin 0, 35 g/L and normalized protein nitrogen appearance (nPNA) was 1,54g kg^{-1} d^1. There is positive correlation between appetite status and serum albumin.

Keywords: Hemodialysis, appetite, malnutrition.

INTRODUCTION

High prevalence of protein-energy malnutrition (PEM) and inflammation is observed among maintenance hemodialysis (MHD) patients and varies from 20-50% (1–3). PEM is also an important factor of morbidity and mortality [2].
Appetite, defined as the subjective desire to eat is reduced in MHD patients. The pathophysiological mechanisms of this change in appetite are not well known. This anorexia is probably multifactorial (uremic toxins, inflammation, etc.) and contributes to morbidity and mortality in MHD patients. Assessment of nutritional status in MHD is difficult [3], it is based on various parametres like Subjective Global Assessment score [22], anthropometry, laboratory parameters such as serum albumin, prealbumin and total cholesterol [4], the technical measures of body composition and

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indirect estimation of protein intake (nPNA). This assessment should be carried out regularly, taking into account the limits of each of the parameters used.

The aim of this study was to evaluate the existence of a correlation between appetite status and nutritional status based on anthropometry, biological data and determining the respective prevalence of denutrition.

MATERIAL AND METHOD

This is an observational cross-sectional study including 50 MHD patients and conducted in January 2013 in our dialysis unit.

Demographic data were collected: age, sex, dialysis average, diabetic nephropathy, and comorbidities.

Hemodialysis was performed with synthetic high flux polyamide membrane. Anticoagulation used for extracorporeal circuit was low molecular weight heparin.

Adequate dialysis criteria were: Kt / V double pool (Kt/v dp), Hemoglobin, C-reactive protein (CRP).

The nutritional status was evaluated in three phases

1 - The first 3 questions of the Hemodialysis (HEMO) Study Appetite questionnaire were used to assess the appetite of the MHP. The multiple-choice answers for the first question ("During the past week, how would you rate your appetite?") were as follows: *1*) very good, *2*) good, *3*) fair, *4*) poor,or *5*) very poor.Patients were divided into two groups: group of Normal appetite (very good, good)and group of Diminished appetite (fair,bad and very bad),

2 - Anthropometric measurements: dry weight, height and BMI.

3-The biological parameters, taken on the same day of the questionnaire study: serum protein, serum albumin (assay was done by bromocresol green), prealbumin, total cholesterol, pre-dialysis plasma urea, plasma creatinine pre dialysis, the bicarbonatémie, haemoglobin, CRP.

Protein intake was measured by calculating the rate of generation of protein nitrogen (n PNA) and expressed as g / kg / d [23].

Malnutrition was defined according to the thresholds of the most widely used nutritional parameters:

- BMI <23 kg/m2 or albumin (green bromoscrésol) <38 g / l or prealbumin <0.3 g / l or n PNA <1g/kg/j

Statistical analysis: It was performed by SPSS 10.0 statistical software. Quantitative variables were expressed as mean ± standard deviation, categorical variables by percentages. The comparison of means between the two groups was performed by test of student for continuous variables and logistic   regression   (KHI-2   test)   for   non   parametric   variables.

RESULT AND DISCUSSION

Fifty chronic hemodialysis patients were included (18 women and 32 men). The average age was 56.26 ± 14.16 years, ranging from 21 to 88 years. 29 patients (58%) have an appetite considered normal while 21 patients (42%) had a decreased appetite. The state of appetite, nutritional and biological   characteristics   are   shown   in   Tables1   and   3.

The dialysis vintage median time was 75.96 months. The initial nephropathy was undetermined in 44%, diabetic in 36%, glomerular and vascular in 8% and lithiasic in 4% of cases. The dialysis duration was 235 minutes [160- 240]. The mean Kt / v dp are 1.17 ± 0.28**.** Mean serum Albumin is

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39, 16±3, 52 g/L, Mean serum préalbumin is 0, 35±0, 11 g/l, and mean nPNA is 1, 54± 0, 15 (g kg^{-1} d^{-1}). Demographic data are shown in Table 2.

There is no statistically significant difference between the two groups (depending on the state of appetite) considering the age, sex, length of hemodialysis, the hemoglobin and C-reactive protein.

Appetite status is statistically correlated with albumin levels but not with the others nutritional parameters. (BMI, préalbumin, nPNA).

Discussion:

Several studies show that the prevalence of protein-energy malnutrition in dialysis patients is high. In MHP between 20-50% [1–3] are reported to be malnourished. This may be a consequence of multiple factors, such as protein and energy metabolism, infections and reduced food intake because of anorexia, nausea and vomiting, caused by uremic toxicity. [1-2].

Many reports have shown an association between signs of malnutrition, particularly low serum albumin,   and   increased   morbidity   and   mortality   [2   –10].

  In this study, we found that the response of the 50 MHD patients to a simple question about appetite may be associated with nutritional status. Poor appetite was associated with low albumin level.

      Normal appetite is essential to maintain adequate food intake and to avoid malnutrition.

Diminished appetite, also known as anorexia, which is an early signs of uremia progression in chronic kidney disease, has been reported in MHD patients. It is also the main etiology of protein energy malnutrition and hypoalbuminémie (19, 41). However, few studies have used a systematic assessment of appetite or examined its associations with markers of nutrition, inflammation, anemia, and outcome measures in MHD patients. [1-3].

In developing countries where many laboratories exam may be difficult to have for assessment of nutritional status in MHP, evaluation of appetite status may be very helpful. [5-6].

TABLE 1: Self-reported appetite status of 50 maintenance hemodialysis patients

Appetite status (n, %)	Normal appetite (29, 58%)		Diminished appetite (21, 42 %)		
	Very good (1)	Good (2)	Fair (3)	Poor (4)	Very poor (5)
Frequency (n, %)	(18, 36%)	(11, 22%)	(13, 26%)	(5, 10%)	(3, 6%)

TABLE 2: Demographic characteristics and laboratory values and outcomes in 50 maintenance hemodialysis patients

Variable	Value
Age (years)	56,26 ± 14,16 (21,88)
Sexe n (%) male Female	32(64) 18(35)
BMI (kg/m2)	22,99±4,49
Dialysis vintage (mo)	75,96 [14-300]
Diabetes n(%)	18(36)
Durée hebdomadaire d'HD (hours)	11,75 ±0,04(9,12)
Kt/*V,* double pool	1,17 ± 0,28
nPNA (g kg^{-1} d^{-1})	1,54± 0,15
Blood hemoglobin (g/dL)	11,02±1,19
Cholestérol (g/l)	1,67±0,36
Sérum concentrations : Albumin (g/dL) Prealbumin (mg/dL) C-reactive protein (_g/mL) Cholesterol (g/L)	39,16±3,52 0,35±0,11 4,16±2,88 1,67±0,36

ABLE 3: Demographic characteristics and laboratory values between 02 hemodialysis patients groups according to appetite status

Variable	Appetite status					p
	Normal appetite (29, 58%)		Diminished appetite (21, 42 %)			
	Very good (18, 36%)	Good (11, 22%)	Fair (13, 26%)	Poor (5, 10%)	Very poor (3, 6%)	
Age (years)	52,82		61,00			0,51
Sexe n (%) Male Female	22 7		10 11			
BMI (kg/m2)	24,26±4,33		21,23±4,18			0,017
Dialysis vintage (mo)	66,31±48,12		89,28±69,49			0,17
Diabetes n(%)	7		11			
Kt/V, double pool [1]	1,14±0,33		1,21±0.23			0,98
nPNA (g kg^{-1} d^{-1})[2]	1,59±0.46		1,43±0,39			0,44
Blood hemoglobin (g/dL)	11,17±0,94		10,80±1,46			0,29
Cholestérol (g/l)	1,79±0,37		1,51±0,28			0,26
Sérum concentrations : Albumin (g/dL)	41,00±2,11		36,00±3,54			0,01
Prealbumin (mg/dL)	0,41±0,92		0,26±0,07			0,2
C-reactive protein (_g/mL)	4,37±3,27		3,79±2,08			0,54

CONCLUSION

The protein-energetic malnutrition is common and severe in MHD patients and its prevalence is variable depending on the studied parameters. Our study shows that the careful evaluation of appetite may help the approach of malnutrition in these patients.

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