KSN 2020
FULLY VIRTUAL MEETING

Abstract Type : Poster
Abstract Submission No. : PO-1432

Nutritional Status Factors Associated With Total Iron Binding Capacity Among Maintenance Hemodialysis Patients In Universitas Gadjah Mada Hospital, Indonesia

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Objectives: Total Iron Binding Capacity (TIBC) represents as nutritional status marker associated with clinical outcome in Maintenance Hemodialysis (MHD) patients. Previous cohort study showed that surviving hemodialysis patients have higher TIBC level rather than in deceased patients. The objective of this study is to analyze nutritional status factors associated with TIBC in MHD Patients at Universitas Gadjah Mada Hospital, Indonesia.

Methods: 70 MHD patients who regularly carried out dialysis 2 times per week at Universitas Gadjah Mada Hospital Yogyakarta, Indonesia were involved in the cross-sectional study. Data collected were patient's characteristics, Nutritional status (Anthropometric data, albumin, Energy-protein intake, and Dialysis Malnutrition Score (DMS)). Handgrip Strength (HGS) measured using Handgrip Dynamometer to determine physical health and muscle strength and TIBC obtained by calculating the sum of serum iron and serum unsaturated iron-binding capacity. Mann U-Whitney and chi-square tests were performed to analyze the dependent variables.

Results: 61.4% MHD patients had low level of TIBC (<200 mg/dl). There was a significant association between nutritional status based on DMS and TIBC (p 0.007, OR 95% CI 5;1.477-16.92) and significant difference of mean from visceral fat and subcutaneous fat in lower and upper level of TIBC (p 0.007; 0.038). Lower TIBC found in MHD patients with older age, longer HD vintage, lower Body Mass Index and Mid-Upper Arm Circumference (MUAC), Handgrip Strength, %total fat, Albumin, Subcutaneous fat, and Energy-Protein Intake.

Conclusions: MHD Patients with lower TIBC level tend to have poor nutritional status, longer HD Vintage, and weaker HGS.

Table 1. Mean Difference and Association between Nutritional Status Factors and TIBC

Variable	TIBC		p
	<200 mg/dl	≥200 mg/dl	
Age (years)	50.6 ± 13.8	49.4 ± 11.5	0.655
HD Vintage (months)	45.6 ± 23.6	40 ± 23.5	0.351
MUAC (cm)	24 ± 3.2	26 ± 4.8	0.072
BMI (kg/m2)	21.6 ± 4.5	23.1 ± 3.7	0.089
HGS (kg)	17.2 ± 8.8	19.3 ± 11.5	0.695
% total fat	17.2 ± 8.3	20.8 ± 9.5	0.118
Albumin	4.5 ± 0.4	4.9 ±0.5	0.007*
Visceral fat	5.5 ± 5.1	8.2 ± 6.0	0.038*
Subcutaneous fat	15.1 ± 8.9	19.5 ± 9.3	0.082
Energy intake (Kcal)	973.5 ± 523.2	1006.3 ± 364.6	0.776
Protein intake (gr)	31.4 ± 17.6	34.8 ± 16.6	0.414
DMS (%)			
Malnourished	20 (83.3)	4(16.7)	0.007*
Well-nourished	23 (50.0)	23 (50.0)	

*p<0.05 is statistically significant