



NUTRITION INTERVENTION ON THE PROGRESSION OF DIABETIC AND NONDIABETIC RENAL DISEASES: A PRELIMINARY ANALYSIS

Wen-Ching Yang, Wei-Fen Sheu, Mei-Fang Yang

Department of Food and Nutrition, Taichung Veterans General Hospital, Taiwan

Address : 1650 Taiwan Boulevard Sect. 4, Taichung, Taiwan 40705, ROC

Tel: 886-4-23592525 press 2622 e-mail: nutri1234@vghtc.gov.tw

BACKGROUND

According to statistics, diabetic nephropathy is the main reason caused to chronic kidney disease (CKD). There are significant changes in diet modification from diabetes to CKD in slowing the progression of CKD. Nutrition education by the dietitian plays an important role.

OBJECTIVE

This study aims to investigate whether providing individualized nutritional counseling can improve the glomerular filtration rate (GFR) and nutritional intake in diabetic and non-diabetic chronic kidney disease (CKD) patients.

METHODS

We analyzed retrospectively the clinical documentation of 115 outpatients who were not previously seen by a dietitian for CKD. The 50 of them were chronic kidney disease patients (NDM Group), the other 65 of them were diabetic patients with nephropathy (DM group). Patients were assessed before, and 6 months after nutrition intervention by a dietitian.

RESULTS

At baseline, GFR and body weight were not significantly between DM group and NDM group before nutrition intervention. After nutrition intervention, there was significant increase of GFR was noted in NDM group ($p < 0.05$), but no difference in GFR was seen in DM group. There were significant decreases of body weight ($p < 0.01$), and of energy intake ($p < 0.05$) in DM group, those were no difference in NDM group.

Table1. Baseline Characteristics of Patients with DM and NDM group

Variable	NDM Group (n=50)	DM Group (n=65)	p-value
Age(year)	60.8 ± 21.0	64.8 ± 12.9	0.231
Men(n,%)	19(38)	20(30.8)	0.318
Height(cm)	160.5 ± 8.7	162.9 ± 8.9	0.151
Body weight(Kg)	59.9 ± 11.3	68.5 ± 12.2	0.001**
BUN(mg/dl)	37.4 ± 23.4	42.2 ± 25.6	0.228
Creatinine(mg/dl)	2.7 ± 2.2	3.0 ± 1.9	0.069
GFR(ml/min/1.73 m ²)	35.5 ± 21.0	29.5 ± 16.3	0.322
SBP(mmHg)	129.7 ± 24.1	138.1 ± 19.5	0.302
DBP(mmHg)	78.1 ± 10.7	75.6 ± 11.4	0.325

SBP: Systolic blood pressure; DBP: Diastolic blood pressure
Mann-Whitney U test. *:P<0.05 **:P<0.01

Table2. Clinical Characteristics of CKD Patients with DM Group and NDM Group after Nutrition Intervention

	Baseline		Nutrition intervention		p-value
	Mean ±	SD	Mean ±	SD	
DM Group					
Body weight(Kg)	68.5 ±	12.2	58.6 ±	6.5	0.001**
BUN(mg/dl)	42.2 ±	25.6	40.0 ±	21.6	0.158
Creatine(mg/dl)	3.0 ±	1.9	3.6 ±	3.2	0.085
GFR(ml/min/1.73 m ²)	29.5 ±	16.3	30.7 ±	24.3	0.424
SBP(mmHg)	138.1 ±	19.5	134.3 ±	16.0	0.311
DBP(mmHg)	75.6 ±	11.4	74.6 ±	10.7	0.568
NDM group					
Body weight(Kg)	59.9 ±	11.3	57.0 ±	6.2	0.055
BUN(mg/dl)	37.4 ±	23.4	33.9 ±	21.7	0.022*
Creatinine(mg/dl)	2.7 ±	2.2	2.7 ±	2.6	0.072
GFR(ml/min/1.73 m ²)	35.5 ±	21.0	40.2 ±	23.5	0.021*
SBP(mmHg)	129.7 ±	24.1	127.6 ±	15.0	0.415
DBP(mmHg)	78.1 ±	10.7	74.3 ±	10.8	0.054

Wilcoxon signed-rank test. *:P<0.05 **:P<0.01

Table3. Dietary Energy Intake (Macronutrient Composition and Total Calories)

	Baseline		Nutrition intervention		p-value
	Mean ±	SD	Mean ±	SD	
DM Group					
Energy intake(Cal)	1519 ±	274	1462 ±	263	0.021*
Carbohydrates(g)	193.2 ±	47.3	194.5 ±	47.9	0.609
Fat(g)	57.9 ±	12.2	53.6 ±	12.1	0.003**
Protein(g)	56.3 ±	13.6	50.2 ±	12.2	0.001**
NDM group					
Energy intake(Cal)	1500 ±	288	1473 ±	279	0.525
Carbohydrates(g)	199.9 ±	48.0	197.5 ±	50.7	0.918
Fat(g)	54.3 ±	13.5	53.5 ±	10.9	0.402
Protein(g)	53 ±	15.6	50.2 ±	13.1	0.102

Wilcoxon signed-rank test. *:P<0.05 **:P<0.01

CONCLUSIONS

Providing nutrition intervention resulted in improvement or maintenance of the glomerular filtration rate in both non-diabetic and diabetic chronic kidney disease patients.

KEYWORDS

Chronic kidney disease, Glomerular filtration rate, Diabetic nephropathy, Body weight, Energy intake