

SERUM NT-PROBNP, ACYLGHRELIN, DESACYLGHRELIN, OBESTATIN, AND FATTY ACID BINDING PROTEIN 4 LEVELS IN HEMODIALYSIS PATIENT

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INTRODUCTION AND AIMS: Three distinct ghrelin gene products, namely, acylghrelin, desacylghrelin, and obestatin have been identified. Acylghrelin is a potent stimulator of food intake and gastrointestinal motility while desacyl ghrelin exerts opposite effects on food intake and gastrointestinal motility. The effects of obestatin on food intake and gastrointestinal motility have been controversial. Fatty acid-binding protein 4 (FABP4) mainly expressed in adipocytes and macrophages is associated with obesity, insulin resistance, and atherosclerosis. A positive relationship between serum ghrelin and NT-proBNP levels in patients with heart failure or pulmonary hypertension was reported. The present study investigated the relationships among acylghrelin, deacylghrelin levels, obestatin, FABP4 and the N-terminal prohormone of B-type natriuretic peptide (NT-proBNP) in hemodialysis dialysis (HD) patients.

METHODS: The study included 60 hemodialysis (30 male, 30 female) and 20 (9 male, 11 female) age, gender and body mass index (BMI) matched healthy control subjects. Serum ghrelin, obestatin and FABP4 levels were measured by enzyme immunoassay (ELI-SA, Enzyme Linked Immunosorbent Assay). NT-proBNP levels were determined using chemiluminescent immunometric assay.

RESULTS: Serum desacylghrelin, FAB4 and NT-proBNP levels were higher in HD patients [(1080,9±602,8 vs 499,9±313,6 pg/mL), (11,7±2,7 vs 1,9±0,8 ng/mL), (12946,2±15279,6 vs 189,3±195,6 pg/mL) respectively] than those of controls (p:0.000). There was no difference according to serum acylghrelin, and obestatin levels between HD patients and controls (Table 1). Serum acylghrelin levels were positively correlated with serum albumin levels (r:0.282, p:0.029), whereas serum acylghrelin levels were negatively correlated with serum desacylghrelin levels (r:-0.358, p:0.005). Serum acylghrelin levels were not correlated with age, dialysis duration, serum creatinine, albumin, calcium, phosphate, obestatin, FAB4, NT-proBNP and intact parathroid hormone (iPTH) levels (p>0.05). Serum deacylghrelin levels were negatively correlated with acylghrelin (r:-0.358, p:0.005) and iPTH levels (r:-0.278, p:0.032). Serum desacylghrelin levels were not correlated with age, dialysis duration, serum creatinine, albumin, calcium, phosphate, obestatin, NT-proBNP, and FAB4 levels (p>0.05). Serum NT-proBNP levels were not correlated with age, dialysis duration, serum creatinine, albumin, calcium, phosphate, iPTH, acylghrelin, desacylghrelin, obestatin, and FAB4 levels (p>0.05). Serum FAB4 levels were positively correlated with serum phosphate levels (r:0.387, p:0.002). Serum FAB4 levels were not correlated with age, dialysis duration, serum creatinine, albumin, calcium, phosphate, iPTH, acylghrelin, desacylghrelin, obestatin, and NT-proBNP levels (p>0.05). Table 2 shows correlation among serum NT-proBNP, acylghrelin, desacylghrelin, obestatin, and fatty acid-binding protein 4 levels in hemodialysis patients,

CONCLUSIONS: In HD patients serum NT-proBNP levels were not correlated with serum acylghrelin, desacylghrelin, obestatin, and FAB4 levels while serum acylghrelin was negatively correlated with serum desacylghrelin levels. Serum desacylghrelin and FAB4 levels were higher in HD patients than those of controls. Some studies reported that serum desacylghrelin level and FAB4 were useful cardiometabolic markers for predicting atherosclerosis in patients with normal kidney function. Further studies are needed to clarify whether high desacylghrelin and FAB4 levels in HD patients contribute to atherosclerosis.

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Table 1. Comparison of the HD patients to controls

	HD patients N: 60 Mean± Std. Deviation	Controls N:20 Mean ±Std. Deviation	p
Age (years)	57,6±15,9	54,5±11,4	0,234
BMI (kg/m ²)	25,8±5,5	26,8±4,8	0,374
NT-proBNP (pg/mL)	12946,2±15279,6	189,3±195,6	0,000
FAB4 (pg/mL)	11,7±2,7	1,9±0,8	0,000
Obestatin (ng/mL)	5,9±2,3	6,1±1,8	0,463
Acylghrelin (pg/mL)	14,2±21,4	16,5±25,3	0,920
Desacylghrelin (pg/mL)	1080,9±602,8	499,9±313,6	0,000

Table 2. Correlation among Serum NT-proBNP, acylghrelin, desacylghrelin, obestatin, and Fatty acid-binding protein 4 levels in hemodialysis patients

		NT-proBNP	FAB4	Obestatin	Acylghrelin	Desacylghrelin
NT-proBNP	r	1,000	0,148	-0,068	-0,146	0,214
	p	.	0,258	0,608	0,267	0,100
FAB4	r	0,148	1,000	-0,094	-0,145	0,101
	p	0,258	.	0,473	0,271	0,441
obestatin	r	-0,068	-0,094	1,000	-0,153	0,196
	p	0,608	0,473	.	0,242	0,134
Acylghrelin	r	0,114	0,469	0,137	1,000	0,009
	p	0,114	0,469	0,137	0,009	0,000
Desacylghrelin	r	-0,146	-0,145	-0,153	1,000	-0,358**
	p	0,267	0,271	0,242	.	0,005
	r	0,214	0,101	0,196	-0,358**	1,000
	p	,100	0,441	0,134	0,005	.