

Achievement ratio of serum lipid management goals in long-term chronic hemodialysis patients for over 30 years

Takayasu Taira¹, Go Oda¹, Koichi Azuma¹, Toru Takemura¹, Tetsuo Chiba¹, Tsutomu Hirano²

Department of Nephrology, Yokohama Dai-ichi Hospital, Yokohama, Kanagawa, Japan¹,

Department of Diabetes, Metabolism and Endocrinology, Showa University School of Medicine, Tokyo, Japan²

OBJECTIVES

Chronic hemodialysis (HD) patients usually have lower plasma high-density lipoprotein (HDL)-cholesterol (C) levels than healthy subjects. Low HDL-C levels are associated with an increased risk of death in chronic HD patients. Categorization for patients with dyslipidemia has been proposed in Japanese Atherosclerosis Society Guideline for prevention of Atherosclerotic Cardiovascular Disease 2012. Achievement ratio of serum lipid management goals (SLMGs) in chronic HD patients is unclear. Clinical practice guideline for chronic kidney disease-mineral and bone disorder (CKD-MBD) has been proposed by the Japanese Society for Dialysis Therapy.

The aim of this study is to investigate the achievement ratio of SLMGs and CKD-MBD in long-term chronic HD patients.

METHODS

(1) **SUBJECT** 1490 chronic HD patients

Group	Case	HD duration (years)
Group 1	1100	10 ≧ ~ 20 <
Group 2	292	20 ≧ ~ 30 <
Group 3	98	30 ≧

(2) **METHODS**

We retrospectively investigated the serum total cholesterol (TC), triglyceride (TG), low-density lipoprotein (LDL)-C, HDL-C, phosphate (P), calcium (Ca), intact parathyroid hormone (intact-PTH), β₂-microglobulin (β₂-m), high sensitive CRP, serum albumin levels in chronic HD patients.

RESULTS

Case: A 67-year-old woman presented tongue disease and chronic renal failure. She started HD three times a week due to chronic glomerulonephritis in May 1973. She gave birth to a boy in June 1977. This is the first successful pregnancy and delivery case in Japan. Dialysis amyloidosis plus positive HCV was accompanied with hypoalbuminemia. She still can walk on her feet and live on her own. It has been reported that serum HDL-C and exercise are related.

Amyloidosis

macroglossia : deformation (+), hard



Laboratory data

(October 5, 2015)

WBC	8800/μL	Ca	8.9 mg/dL
RBC	337x10 ⁴ /μL	P	5.5 mg/dL
Hb	10.4 g/dL	intact PTH	5 pg/mL
Ht	33%	ALP	239 U/L
Plt	26.0x10 ⁴ /μL	CRP	1.56 mg/dL
		AST	12 U/L
		ALT	12 U/L
		Glu	109 mg/dL
		T-cho	179 mg/dL
		TG	62 mg/dL
		HDL-C	61 mg/dL
		LDL-C	104 mg/dL
		SUN	66 mg/dL
		Crea	8.17 mg/dL
		Urea	61 μg/dL (standard value: 65-110 μg/dL)

	HDF	pre	post
β ₂ -m		19.7	→ 7.1
		(standard value: below 30 mg/L)	
Serum amyloid A (SAA)		85.5	μg/mL
		(standard value: below 8.0 μg/mL)	

(January 28, 2016)
lower lip: tumor (+), pain (+)

Skin biopsy: Amyloidosis

RLP-C	3.4 mg/dL	(standard value: below 7.5 mg/dL)
Kt/V	1.76	
HCV-Ab	14.27 sites	
Bone specific alkaline phosphatase (BAP)	14.8	μg/mL
	(standard value: 3.8-22.6 μg/L)	

Baseline characteristics of patients

	Group 1 10 ≧ ~ 20 <	Group 2 20 ≧ ~ 30 <	Group 3 30 ≧
case	1100	292	98
male	778 (70.7%)	169 (57.9%)	43 (43.9%)
female	322 (29.3%)	123 (42.1%)	55 (56.1%)
mean age (years)	64.4 ± 12.5 (28 ~ 95)	63.7 ± 10.9 (27 ~ 88)	65.2 ± 6.1 (38 ~ 85)
mean age at HD start (years)	50.5 ± 12.9 (19 ~ 82)	40.8 ± 10.8 (17 ~ 68)	32.2 ± 8.9 (7 ~ 54)

Serum β₂-m, high sensitive CRP, albumin levels

	Group 1 10 ≧ ~ 20 < 1100	Group 2 20 ≧ ~ 30 < 292	Group 3 30 ≧ 98
β ₂ -m (mg/L)	30.3 ± 4.9	28.6 ± 5.0	24.8 ± 6.3
under 30 mg/L	661 (60.1%)	212 (72.6%)	80 (81.6%) **
CRP (mg/dL)	0.5 ± 1.1	0.4 ± 1.1	1.1 ± 2.6
albumin (g/dL)	3.7 ± 0.4	3.7 ± 0.4	3.6 ± 0.4

** P = 0.001 for the comparison with the group 1

Primary disease of chronic HD patients

Case	Group1 1100	Group2 292	Group3 98
Chronic glomerulonephritis	371 (33.7%)	158 (54.1%)	71 (72.4%)
IgA nephropathy	107 (9.7%)	25 (8.6%)	1
Membranous nephropathy	5	2	0
RPGN	7	2	0
Toxemia of pregnancy	9 (0.8%)	8 (2.7%)	9 (9.2%)
Unknown	145 (13.2%)	34 (11.6%)	9 (9.2%)
Nephrosclerosis	62 (5.6%)	12 (4.1%)	2
Malignant hypertension	11 (1.0%)	0	0
Chronic pyelonephritis	17 (1.5%)	13 (4.5%)	2
Lupus nephritis	8	2	1
Hereditary nephritis	0	4	1
Polycystic kidney disease	77 (7.0%)	19 (6.5%)	1
Renal hypoplasia	7	3	1
Diabetic nephropathy	263 (23.9)	9 (3.1%)	0
Renal cancer	6	1	0
Gouty kidney	5	0	0

RPGN: rapidly progressive glomerulonephritis

Achievement ratio of serum lipid management goals

	Group1 1100	Group2 292	Group3 98
LDL-C			
under 120 mg/dL	952 (86.5%)	236 (80.8%)	84 (85.7%)
under 100 mg/dL	755 (68.6%)	189 (64.7%)	64 (65.3%)
HDL-C			
more than 40 mg/dL	872 (79.3%)	243 (83.2%)	93 (94.9%) **.#
TG			
under 150 mg/dL	896 (81.5%)	239 (81.8%)	83 (84.7%)
non HDL-C			
under 150 mg/dL	984 (89.5%)	253 (86.6%)	90 (91.8%)
under 130 mg/dL	965 (87.7%)	223 (76.4%)	77 (78.6%)

** P = 0.002 for the comparison with the group 1
P = 0.015 for the comparison with the group 2

Serum lipid levels

Case	Group1 1100	Group2 292	Group3 98
TC (mg/dL)	160.4 ± 35.9	165.9 ± 35.3	163.7 ± 35
LDL-C (mg/dL)	87.9 ± 29.7	91.6 ± 30.7	89.2 ± 28.3
HDL-C (mg/dL)	53.7 ± 17.3	56.2 ± 17.3	58.1 ± 14.6
TG (mg/dL)	110.5 ± 68.8	108.9 ± 57.7	102.2 ± 50.4
non HDL-C (mg/dL)	106.8 ± 34.4	108.5 ± 35.2	105.6 ± 33.1
LDL-C / HDL-C	1.8 ± 0.8	1.7 ± 0.8	1.6 ± 0.7

P, Ca, intact-PTH levels

Case	Group1 1100	Group2 292	Group3 98
P	5.4 ± 1.3	5.3 ± 1.3	5.2 ± 1.2
3.5 ~ 6.0 mg/dL	725 (65.9%)	207 (70.9%)	73 (74.5%)
Ca	9.0 ± 0.8	8.9 ± 0.8	9.0 ± 0.9
8.4 ~ 10.0 mg/dL	821 (74.6%)	217 (74.3%)	70 (71.4%)
intact-PTH	234.0 ± 276.0	220.8 ± 268.3	168.5 ± 211.8
60 ~ 240 pg/mL	605 (55.0%)	162 (55.5%)	56 (57.1%)

CONCLUSIONS

Achievement ratio of HDL-C in long-term chronic HD patients was high. HDL-C may be a survival factor in long-term chronic HD patients.

