Levels of Plasma Lipoprotein(a) in Continuous Ambulatory Peritoneal Dialysis Are Not Related to Peritoneal Losses of Albumin

J.	Jesús	Montenegro
I.	Iñigo	Moina
R.	Ramón	Saracho
O.	Olga	González
I.	Isabel	Martínez
M.	Margarita	Esteban

Services of Nephrology and Biochemistry, Hospital de Galdácano, Vizcaya, Spain

Dr. Jesús Montenegro, Servicio de Nefrología, Hospital de Galdácano, E-48960 Galdácano. Vizcaya (Spain), Tel. (4) 4369000, Fax (4) 4566268

Dear Sir,

Lipoprotein(a), Lp(a), is a risk factor of coronary heart disease, independent of other factors [1]. Plasma levels of Lp(a) have been reported to be found more frequently and markedly increased in continuous ambulatory peritoneal dialysis (CAPD) patients than in normal people [2]. The mechanism for this elevation is poorly understood. However, two features specific to CAPD, the peritoneal absorption of glucose and protein losses in the dialysate, have been suggested as causes of an increased synthesis or, perhaps, decreased catabolism of Lp(a) [3].

Recently in Nephron, Heimbürger et al. [4] reported that the elevation of Lp(a) in CAPD patients was related to peritoneal losses of albumin (Alb.) and to the peritoneal transport of proteins and glucose. The aim of this letter is to show the different results we obtained in a similar study. A total of 59 adult stable CAPD patients (42% women) with a mean age of 57 ± 15 years and a mean weight of 68 ± 10 kg were enrolled in a cross-sectional study. The duration of CAPD treatment was 28 ± 15 months on average. None of the patients were treated with any lipid-lowering drugs. The cause of renal failure was diabetic ne-phropathy in 5 patients and anuria in another 18 patients. The prescribed daily dialysate volume was 8 liters in the majority of the patients.

After an overnight fast, blood samples for determination of plasma Lp(a), serum Alb., cholesterol, triglycerides, high-density lipo-protein cholesterol, low-density lipoprotein cholesterol, creatinine (Cr), urea and β_2 -

Table 1. Results of all patients, means and standard deviations

quo-

Kp = Peritoneal clearance; D/P Cr =

tient between the Cr in dialysate and plasma Cr, LDL-Chol. = low-density lipoprotein cholesterol; HDL-Chol. = high-density lipoprotein cholesterol.

microglobulin (β_2 -M) were drawn in the morning. Cr, urea, Alb. and β_2 -M were determined in the urine collected for 24 h. These parameters were also calculated in every drained bag during 24 h.

The Lp(a) levels were analyzed using a cobra monoclonal antibody, obtained from purified Lp(a) of Instar (USA), an immuno-turbidimetric method. The coefficient of variation was 4.7% at a standard concentration of 19 mg/dl and 3.5% at a standard concentration of 41 mg/dl. Alb. in dialysate and urine was determined using an immunotur-

Table 2. Correlation coefficients (r) and statistical significance (p) between Lp(a) and other parameters

Kp = Peritoneal clearance; D/P Cr = quotient between the Cr in dialysate and plasma Cr. bidimetric method, Nephelometer BNII (Boehring, Germany), with an interassay coefficient of variation of 4.6-7.7%.

The demographic data of both studies do not show significant differences, except for the number of patients, which is larger in our study, and the cause, that is, more diabetic patients in the study of Heimbürger et al. [4]. The dialytic scheme was the same in both studies, but the number of months in CAPD was greater in our study.

Lp(a) levels, shown in table 1, are higher than in the study of Heimbürger et al. [4],

KARGEH

E-Mail karger@karger.ch Fax+ 41 61 306 12 34 <http://www.karger.ch>

© 1997 S. Karger AG, Basel 0028-2766/97/0762-0239\$ 12.00/0

This article is also accessible online at: <http://BioMedNet.com/karger>

having 32 patients with more than 30 mg/dl. The Lp(a) mean in plasma is close to that of other studies. This difference is possibly due to the laboratory method, which was different from our. However, in other studies published recently [5, 6], the average Lp(a) values, using the same laboratory method, were similar to ours.

The mean peritoneal loss and peritoneal clearance of Alb. shown in table 1 are not different from the study of Heimbürger et al. [4]. Furthermore, the laboratory method for measuring Alb. was the same in both studies. No differences were observed in the peritoneal clearance of β_2 -M.

The statistical results, described in table 2, show no correlation between Lp(a) and daily peritoneal losses of Alb. ($r = 0.10$), between total daily excretions of Alb. ($r = 0.05$). We did not find any correlation between Lp(a) and the peritoneal transport of β_2 -M and Cr.

These differences in study results may be due to the laboratory method of evaluating Lp(a), the number of patients or ethnicity. However, we cannot say that the peritoneal losses of Alb. or the peritoneal transport of β_2 -M and Cr influences the marked increase in Lp(a) levels. The mechanism of Lp(a) elevation may be multifactorial, and these different results can be explained by the variation and genetic polymorphism of Lp(a). Future studies, including a larger sample of patients, should clarify this controversy.

References

Boston AG, Cupples LA, Jenner JL, Ordovas JM, Seman LJ, Wilson PWF, Schaefer EJ, Castelli WP: Elevated plasma lipoprotein (a) and coronary heart disease in men aged 55 years and younger. A prospective study. JAMA 1996; 276:544-548.

Webb AT, Reaveley DA, O'Donnell M, O'Connor B, Seed M, Brown EA: Lipoprotein (a) in patients on maintenance haemodialysis and continuous ambulatory peritoneal dialysis. Nephrol Dial Transplant 1993;8:609-613.

Kronenberg F, Uterman G, Dieplinger H: Lipoprotein (a) in renal disease. *Am J Kidney Dis* 1996;27(1):1-25.

Heimbürger O, Stenvinkel P, Berglund L, Tra-næus A, Lindholm B: Increased plasma lipoprotein(a) in continuous ambulatory peritoneal dialysis is related to peritoneal transport of proteins and glucose. *Nephron* 1996;72:135-144.

Wanner C, Bartens W, Walz G, Nauck M, Schollmeyer P: Protein loss and genetic polymorphism of apolipoprotein(a) modulate serum lipoprotein(a) in CAPD patients. *Nephrol Dial Transplant* 1995;10:75-81.

Gault MH, Longerich LL, Purchase L, Harnett J, Breckenridge C: Comparison of Lp(a) concentrations and some potential effects in hemo-dialysis, CAPD, transplantation, and control groups, and review of the literature. *Nephron* 1995;70:155-170.