S-A2

Plasma PCSK9 in Nephrotic Syndrome and in Peritoneal Dialysis: A Cross-sectional Study

Kyubok Jin[1], Bong-Soo Park[1], Sihyung Park[1], Yang-Wook Kim[1], Joung-Sun Kang[1]
You-Sun Jeon[1], Hyun-Jung Jang[1], Nosratola D. Vaziri[2]

Department of Medicine[1], Inje University Haeundae Paik Hospital
Department of Medicine[2], Division of Nephrology and Hypertension University of California Irvine

Background: Serum total and LDL cholesterol are elevated in the nephrotic and peritoneal dialysis (PD) patients who share heavy losses of protein in the urine and peritoneal dialysate respectively. Hypercholesterolemia in nephrotic syndrome is associated with and largely due to acquired LDL receptor (LDLR) deficiency. Since PCSK9 promotes degradation of LDLR, we tested the hypothesis that elevation of LDL in nephrotic and PD patients may be due to increased PCSK9.
Study Design: Prospective cohort study.
Participants: Cohorts of nephrotic, PD and hemodialysis patients and age- and gender-matched healthy Korean individuals were recruited in the study (N=15 in each group).
Outcomes: Assessment of plasma PCSK9 and its relationship with serum total and LDL cholesterol.
Measurements: Fasting serum PCSK9, lipids, and albumin concentrations and urine protein excretion.
Results: Serum total and LDL cholesterol in the nephrotic (317.9±104.2 mg/dL and 205.9±91.1 mg/dL) and PD patients (200.0±27.6 mg/dL and 126.7±18.5 mg/dL) were significantly ($p<0.05$) higher than those in the control (166.5±26.5 mg/dL and 95.9±25.2 mg/dL) and hemodialysis (140.9±22.9 mg/dL and 79.1±19.5 mg/dL). This was associated with significantly ($p<0.05$) higher plasma PCSK9 levels in the nephrotic (15.13±4.99 ng/mL) and PD (13.30±1.40 ng/mL) than in the control (9.19±0.60 ng/mL) and hemodialysis (7.30±0.50 ng/mL) groups (Data are mean±SD). Plasma PCSK9 was directly related with total and LDL cholesterol concentrations in the study population (Spearman $r=0.559$; $p<0.001$ and $r=0.497$; $p<0.001$ respectively).
Conclusions: Nephrotic syndrome and PD raise the circulating PCSK9 level which can contribute to elevation of LDL by promoting LDLR deficiency.

Key Words: Hyperlipidemia, LDL cholesterol, Cardiovascular disease