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Association of Serum Lipid Levels over Time with Survival in Incident Peritoneal dialysis Patients

Cheol ho PARK[1], Ea wha KANG[2], Jung tak PARK[1], Seung hyeok HAN[1], Tae-hyun YOO[1], Shin-wook KANG[1], *Tae ik CHANG[2]

[1]Department of Internal Medicine, Yonsei University College of Medicine, Korea,South, [2]Department of Internal Medicine, NHIS Medical Center, Ilsan Hospital, Korea,South

Objectives : Paradoxical associations between serum lipid levels and mortality have been frequently observed in hemodialysis patients. However, the association of dyslipidemia with mortality has not been fully evaluated in patients on peritoneal dialysis (PD). Moreover, change in lipids levels over time and associated death risk have not yet been studied in this population.

Methods : We studied the association between time-updated serum lipid concentrations and all-cause and cardiovascular (CV) mortality in a 10-year cohort of 739 incident PD patients during 1/1/2006-12/31/2015, using time-varying Cox proportional hazard regression models.

Results : During a median follow-up of 36 (inter-quartile range, 21-61) months, 273 all-cause and 107 CV deaths occurred. Compared to those with time-varying total cholesterol (TC) of 180 to <210 or low-density lipoprotein cholesterol (LDL-C) of 100 to <130 mg/dL, the hazard ratios (95% confidence intervals) of the lowest TC (<150 mg/dL) and LDL-C (<70 mg/dL) were 2.32 (1.61-3.35) and 2.02 (1.45-2.83) for all-cause mortality and 1.87 (1.04-3.37) and 1.92 (1.13-3.26) for CV mortality, respectively. In addition, lower triglyceride (<100 mg/dL) and HDL-C (<30 mg/dL) levels were associated with higher all-cause mortality (1.66 [1.11-2.47] and 1.57 [1.08-2.29]), but not CV mortality.

Conclusions : Contrary to the general population, lower TC and LDL-C levels over time were significantly associated with both worse survival and increased CV mortality in incident PD patients. Similarly, lower time-updated triglyceride and HDL-C concentrations were also associated with higher all-cause mortality, but they did not have any clear associations with CV mortality. Further studies are needed to explain the underlying mechanisms responsible for these paradoxical associations between lower lipid levels (i.e., TC, LDL-C, and triglyceride) and poor outcomes in patient population with end-stage renal disease.

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