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Association between the degree of LDL-cholesterol reduction and survival according to the use of statins in CKD patients

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Objectives: The beneficial effects of statins start with their effective lowering of low-density lipoprotein cholesterol (LDL-C) levels. We classified the therapeutic effect of statins by the degree of LDL-C reduction and investigated their effects on mortality in chronic kidney disease (CKD) patients.

Methods: We collected 4,710 patients diagnosed with CKD in Seoul National University Hospital and Dongguk University Ilsan Hospital between 2006 and 2019. Based on the history of statin usage and LDL-C followed through 2019, three groups were constructed; (1) the patients who have never been prescribed the statin during the follow-up period, (2) the patients who used statin over 90 days but fail to reach the LDL-C levels below 100 mg/dL, and (3) patients who used statin over 90 days and reached the LDL-C levels below 100 mg/dL. Cox proportional hazard model was used to assess the association between three group by statin usage and mortality.

Results: During the average follow-up of 5.9 years, 972 (20%) patients used statin over 90 days, and 755 patients reached the LDL-C levels below 100 mg/dL. The average of estimated glomerular filtration rate was 80.4 mL/min/1.732m² in group 1, 76.4 mL/min/1.732m² in group 2, and 62.8 mL/min/1.732m² in group 3. Although the mortality risk in group 2 was not significantly low compared to group 1 (hazard ratio [HR] 0.69, 95% confidence interval [CI] 0.43–1.10), group 3 showed significantly reduced mortality risk compared to group 1 (HR 0.58, 95% CI, 0.45–0.75).

Conclusions: The quantitative LDL-C reduction following statin use was positively correlated with survival of CKD patients.