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Epicardial adipose tissue radio-density is associated with all-cause mortality in patients undergoing hemodialysis

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Objectives: The radio-density and volume of epicardial adipose tissue (EAT) on computed tomography angiography (CTA) may provide information on cardiovascular risk and long-term outcomes. EAT volume is associated with mortality in incident hemodialysis patients. However, the relationship between EAT radio-density and volume and all-cause mortality in end stage renal disease (ESRD) patients maintaining hemodialysis remains elusive.

Methods: In this retrospective study, EAT radio-density (in Hounsfield units) and volume (in cm^3) were quantified using an automatic, quantitative measurement software for coronary CTA in ESRD patients between January 2012 and December 2018. All-cause mortality data (up to December 2019) was obtained from the Korean National Statistical Office. The prognostic values of EAT radio-density and volume for predicting long-term mortality were assessed using multivariable Cox regression models, adjusting for potential confounders.

Results: A total of 221 patients (mean age: 64.88 ± 11.09 years; 114 women and 107 men) with ESRD were included. The median follow-up duration (interquartile range) after coronary CTA was 29.63 (16.67, 44.7) months. During follow-up, 82 (37.1%) deaths occurred. In the multivariable analysis, EAT radio-density (hazard ratio [HR]: 1.055; 95% confidential interval [CI]: 1.015 – 1.095; $P = 0.006$) was an independent predictor of all-cause mortality in ESRD patients. However, the EAT volume was not associated with mortality in prevalent hemodialysis patients.

Conclusions: High EAT radio-density on CTA is associated with long-term all-cause mortality in prevalent hemodialysis patients; therefore, EAT radio-density on CTA may be a prognostic imaging biomarker in patients undergoing hemodialysis.