Combined impact of residual inflammatory risk and chronic kidney disease on long-term clinical outcomes in patients undergoing percutaneous coronary intervention

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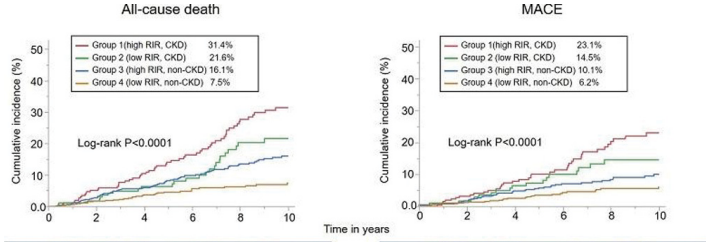
Background: Inflammatory status pre-percutaneous coronary intervention (PCI) and post-PCI has been reported not only associated with poor prognosis, but also to impair renal function. Statins reduce cardiovascular events by lowering lipids and have anti-inflammatory impacts, but residual inflammatory risk (RIR) exists. It remains unclear that the synergistic effect of RIR and chronic kidney disease (CKD) on long-term clinical outcome in stable coronary artery disease (CAD) patients undergoing PCI in statin era.

Aim: The aim of this study was to investigate the long-term combined impact of RIR evaluating hs-CRP at follow-up and CKD among stable CAD patients undergoing PCI in statin era.

Methods: This is a single-center, observational, retrospective cohort study assessing consecutive 2,984 stable CAD patients who underwent first PCI from 2000 to 2016. We analyzed 2,087 patients for whom hs-CRP at follow-up (6–9 months later) was available. High residual inflammatory risk was defined as hs-CRP >0.6 mg/L according to the median value at follow up. Patients were assigned to four groups as Group1 (high RIR and CKD), Group2 (low RIR and CKD), Group3 (high RIR and non-CKD) or Group4 (low RIR and non-CKD). We evaluated all-cause death and major adverse cardiac events (MACE), defined as a composite of cardiovascular (CV) death, non-fatal myocardial infarction (MI) and non-fatal stroke.

Results: Of patients (83% men; mean age 67 years), there were 299 (14.3%) patients in group 1, 201 (9.6%) patients in group 2, 754 (36.1%) patients in group 3, and 833 (39.9%) patients in group 4. The median follow-up period was 5.2 years (IQR, 1.9–9.9 years). In total, 189 (frequency, 16.1%) cases of all-cause death and 128 (11.2%) MACE were identified during follow-up, including 53 (4.6%) CV deaths, 27 (2.4%) MIs and 52 (4.8%) strokes. The rate of all-cause death and MACE in group 1 was significantly higher than other groups ($p<0.001$, respectively). There was a stepwise increase in the incidence rates of all-cause death and MACE. After adjustment for important covariates, the presence of high RIR and/or CKD were independently associated with higher incidence of MACE and higher all-cause mortality. (shown on figure).

Conclusion: The presence of both high RIR and CKD conferred a synergistic adverse effect on the risk for long-term adverse cardiac events in patients undergoing PCI.



Multivariate Cox regression analysis		
	HR (95% CI)	P value
Group 1	2.83 (1.79-4.45)	<0.001
Group 2	2.01 (1.28-3.12)	0.002
Group 3	2.16 (1.45-3.21)	<0.001

Multivariate Cox regression analysis		
	HR (95% CI)	P value
Group 1	3.70 (2.09-6.44)	<0.001
Group 2	2.58 (1.53-4.30)	<0.001
Group 3	1.80 (1.11-2.92)	0.018

Patients in Group4 were used as reference.
Covariates of the fully adjusted model; age, gender, DM, HT, LVEF, MVD, LDL-C, HDL-C, TG, use of statins.

Kaplan-Meier curve