Impact of coronary flow reserve on the mortality and major adverse cardiac and cerebrovascular event in hemodialysis patients, regardless of diabetes

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Background: Ischemic heart disease (IHD) is still a major problem not only in general patients but also in regular hemodialysis (HD) patients. We have reported about prognostic value of coronary flow reserve (CFR) derived from N13-ammonia PET in HD population for all-cause mortality and major adverse cardiac event (MACE) in prior studies. We investigated the impact of diabetes and low CFR on the mortality in HD population.

Methods: A total 1,027 HD patients who undergone 13N-ammonia PET for suspected IHD were enrolled. We divided them into four groups according to CFR (cut off value = 2.0) and whether DM or not. We collected and evaluated their all-cause mortality, cardiovascular (CV) mortality and MACE, and analyzed using Kaplan-Meier methods and uni/multivariate cox regression model.

Results: The number of DM with better CFR group was 194, DM with worse CFR was 244, non-DM with better CFR was 361 and non-DM with worse CFR was 221. We found 285 case of all-cause mortality, 121 case of CV mortality, 164 case of CV mortality and 424 case of MACCE.

Whether DM or not, CFR predicts HD patients’ prognosis precisely (See figure). Furthermore, multivariate Cox regression model showed CFR (continuous value) was an independent predictor for all-cause mortality (hazard ratio (HR); 0.774, 95% confidence interval (CI) 0.606-0.979, p value=0.037) and MACCE (HR0.769, 95%CI0.630-0.932, p=0.009) in DM and HD population. Furthermore, CFR predicted all-cause mortality (HR0.731, 95%CI 0.569-0.940, p=0.015) and non-CV death (HR0.636, 95%CI0.451-0.896, p=0.010) in non-DM and HD population.

Conclusion: The HD patients with DM and low CFR had worst prognosis in all-cause mortality, CV death, non-CV death and MACCE.