Diabetes and hemodialysis are important factor for decrease coronary flow reserve even in the patients with normal myocardial perfusion

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Background: In clinical setting, patients with traditional coronary risk factors are at high risk for coronary artery disease (CAD). Such patients who complain chest discomfort are usually performed nuclear myocardial perfusion (MP) test. We sometimes find patients whose PET result shows normal MP and abnormal coronary flow reserve (CFR). However, there are limited data about the predictors for decreased CFR. In the view of describe above, we have investigated the parameters for decreased CFR in the patients without MP abnormality.

Methods and results: From 20th April 2013 to 21st December 2018, we performed 2,930 13N- ammonia PET for suspected CAD. After excluding the follows; 966 patients with repeated test, 54 patients with incomplete data, one patient missed, we investigated 1,909 eligible patients' data. We performed least square to identify the factors decreased CFR. Hemodialysis (HD), age, prior revascularization, diabetes (DM) and body mass index (BMI) were independent risk factor for decreased CFR in all population. On the other hand, HD, age, DM, hypertension and BMI were independent risk factor for decreasing CFR in patients without MP abnormality. According to the result of least square methods, we classified all patients into four groups; without DM/ without HD group, with DM/ without HD group, without DM/ with HD group and with DM/ with HD group. The value of CFR in each group were as follows: without DM/ without HD group (median, 1st quartile-3rd quartile; 2.88, 2.21–3.52), with DM/ without HD group (2.65, 2.00–3.38), without DM/ with HD group (2.29, 1.67–2.95) and with DM/ with HD group (1.97, 1.43–2.68). There were statistically significant intergroup differences. The value of CFR in the patients without MP abnormality were as follows: without DM/ without HD group (3.04, 2.47–3.65), with DM/ without HD group (2.98, 2.40–3.61), without DM/ with HD group (2.52, 2.10–3.08) and with DM/ with HD group (2.38, 1.86–2.97). Even in the patients without MP abnormality, there were also statistically significant intergroup differences.

Conclusion: According to our 13N-ammonia PET data analysis, DM and HD were important and independent factors for decreased CFR. Even in the patients without MP abnormality, DM and HD were important factor for decreased CFR.