Malnutrition is a major factor to affect prognosis of patients undergo percutaneous coronary intervention for coronary artery disease with calcified lesions

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Background: In patients undergo PCI for coronary artery disease, target lesion calcification is associated with major cardiac events. Malnutrition is the important factor to cause frailty and sarcopenia which affect prognosis of cardiovascular diseases. However, the relationship between morphology in target lesions and malnutrition in patients undergo PCI is still uncertain.

Purpose: The aim of the present study was to investigate how malnutrition affects prognosis of stable angina patients underwent PCI and morphology in target lesions.

Methods: The subject was 206 consecutive stable angina patients undergone successful PCI using second-generation drug eluting stents and intravascular ultrasound (IVUS). The study patients were divided into two groups based on malnutrition or non-malnutrition. Nutritional status was assessed by Geriatric Nutritional Risk Index (GNRI), and patients with GNRI<92 at admission were defined as malnutrition group (MG). We investigated the association between malnutrition on admission and outcome, and morphology in target lesions assessed by IVUS. Target lesion morphology were divided into moderate/severe calcified group and none/mild calcified group.

Results: All-cause death and MACCE (major cardiovascular and cerebrovascular events) ≤3 years after PCI were 15 cases (7%) and 33 cases (16%). MG had higher rate of all-cause death (20 vs. 6%, p = 0.001) and MACCE (37 vs. 10%, p < 0.001) than those of non-MG. Kaplan Meier analysis elucidated that survival rate was significantly lower in MG compared to that in non-MG (p < 0.001). As a result of cox proportional hazards analysis, all-cause death was associated with age [hazard ratio (HR): 1.05, 95% confidence interval (CI): 1.01–1.10, p = 0.006], hs-CRP (HR: 1.03, 95% CI: 1.03–1.12, p < 0.001), hemodialysis (HR: 2.25, 95% CI: 1.08–4.68, p = 0.029), left ventricular ejection fraction (LVEF) (HR: 0.97, 95% CI: 0.95–0.99, p = 0.017) and malnutrition (HR: 4.38, 95% CI: 2.11–9.09, p < 0.001) in the univariate analysis. Similarly, cox proportional hazards analysis revealed that age (HR: 1.04, 95% CI: 1.01–1.07, p = 0.018), hs-CRP (HR: 1.08, 95% CI: 1.03–1.11, p < 0.001), hemodialysis (HR: 2.68, 95% CI: 1.45–4.94, p = 0.002), LVEF (HR: 0.97, 95% CI: 0.95–0.99, p = 0.002) and malnutrition (HR: 4.14, 95% CI: 2.23–7.67, p < 0.001) were significantly associated with MACCE. Multivariate analysis for all-cause death and MACCE revealed that malnutrition was an independent risk factor (HR: 3.47, 95% CI: 1.52-7.94, p = 0.003, HR: 3.76, 95% CI: 1.87–7.58, p < 0.001).

Conclusions: Malnutrition was a crucial independent risk factor for stable angina patients who underwent PCI and was significantly associated with moderate/severe target calcified lesions.