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당뇨 투석 환자에서 혈당 조절이 심혈관계 예후에 미치는 영향

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Glycemic Control and Cardiovascular Outcomes in Incident Dialysis Patients with Diabetes

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Background: Most current guidelines recommend that target hemoglobin A1C levels (HbA1C) for patients with diabetes (DM) should be <7.0% irrespective of the presence of chronic kidney disease. However, since clinicians should consider the risk of hypoglycemia in individual patients with particular regard to age and comorbidity, there has been much debate whether such recommendation can be applicable generalized to end-stage renal disease (ESRD) population.

Methods: A prospective cohort of 907 incident hemodialysis patients with type 1 or type 2 DM from 36 dialysis centers of the Clinical Research Center for ESRD in Korea was selected for this study, and the impact of HbA1C concentrations on cardiovascular outcome was clarified. Based on the baseline HbA1C levels, patients were divided into 5 groups: <6.0%, ≥9.0%, and every 1.0% increment in between, and a composite of cardiovascular death and non-fatal major cardiovascular events; myocardial infarction, stroke, therapeutic coronary or carotid intervention, vascular intervention, or amputation, was compared among the groups,

Results: The mean baseline HbA1C concentrations of the study subjects was 6.6±1.4%. During a mean follow-up duration of 15.0±9.9 months, 39 patients died of cardiovascular diseases and 78 non-fatal major cardiovascular events occurred. Compared to patients with HbA1C of 7.0-7.9%, the hazard ratios (HRs) of HbA1C <6.0%, 6.0-6.9 %, 8.0-8.9%, and ≥9.0% groups were 1.02 [95% confidence interval (CI), 0.55-1.86; p=0.12], 1.59 (95% CI, 0.89-2.82; p=0.9), 2.04 (95% CI, 0.92-4.52; p=0.08), and 2.17 (95% CI, 1.02-4.62; p=0.04), respectively, after adjustment for demographic characteristics, and nutritional and inflammatory markers. Sensitivity analysis revealed that HbA1C ≥9.0% was significantly associated with an increased risk of reaching the composite outcome in patients with body mass index ≥24 kg/m^2 (HR, 2.51; 95% CI, 1.09-5.82; p=0.03). In addition, compared to HbA1C <9.0% group, patients with HbA1C ≥9.0% conferred a 3.93-fold higher risk of reaching the composite outcome in a subgroup with serum albumin levels ≥3.3 g/dL (95% CI, 1.51-10.25; p=0.01).

Conclusions: Poor glycemic control (HbA1C ≥9.0%) was significantly associated with adverse cardiovascular outcome in incident dialysis patients with DM, especially in patients who have a good nutritional status. A further long-term observational study is needed to determine the optimal levels of HbA1C in these patients.

Key Words: 당뇨병, 투석, 심혈관계 예후
Diabetes mellitus, Dialysis, Cardiovascular outcomes