

당뇨 환자에서 말기 신부전을 예방하는데 적절한 HbA1c 수준은 얼마인가

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Which Level of HbA1c is Appropriate for Prevention of ESRD in DM Patients?

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Background : The diabetic nephropathy is the leading cause of ESRD. The guidelines recommend HbA1c should be lower than 7.0% or 6.5% but which level of HbA1c is appropriate to prevention of renal progression and mortality in Korean is not defined.

Methods : We searched all patients with DM who visited to SNUBH in 2004, gathered data from electronic medical record. We defined the outcome as an incidence of ESRD during follow-up period. We grouped the patients according to the level of HbA1c in 2004.

Results : Among 5,623 DM patients, there were 2,915 males (51.8%) and the mean age was 65.8 (15.8) years. Hypertension was in 72.6% of patients, coronary artery disease in 19.3%, cerebrovascular accident in 20.1%, and cancer was diagnosed in 9.0%. HbA1c was tested in 4,524 patients (80.5 %) in 2004, once or more. The mean HbA1c was 7.42% (SD: 1.56%). Among patients with the results of HbA1c, 204 (4.5%) patients had it less than 5.5%, 379 (8.4%) patients had HbA1c in 5.5–5.9 %, 695 (15.4%) in 6.0–6.4%, 679 (15.0%) in 7.0–7.4%, 489 (10.8%) in 7.5–7.9%, 396 (8.8%) in 8.0–8.4%, and 917 patients (20.3%) had HbA1c 8.5% or more. The GFR was not different among groups according to the level of HbA1c in 2004. Except 36 patients who had maintenance renal replacement therapy in 2004, 91 patients (2.0%) were progressed to ESRD during 63.5 (SD 13.7) months until Dec/2009. The progression rate to ESRD in patients with HbA1c <5.5% was 0.5% (1/203), patients with 5.5–5.9% :1.6% (6/379), patients with 6.0–6.4% : 1.3% (9/691), patients with 6.5–6.9% : 1.6% (12/763), patients with 7.0–7.4% : 2.1% (14/676), patients with 7.5–7.9% : 1.6% (8/485), patients with 8.0–8.4% : 3.3% (13/392), and patients with 8.5% or more: 3.1% (28/909). When we dichotomized the patients group with the criteria of HbA1c levels of 6.0%, 6.5%, 7.0%, and 7.5% to find the appropriate level to prevent renal progression, the risk to ESRD started to increase with the value of 6.5%. Adjusted with age and univariate factors to related to the incidence of ESRD, such as, gender, SBP, DBP, GFR, and usage of antiplatelet agent, the risk to ESRD increased to 3.49 folds in patients with HbA1c 6.5% or more than with <6.5%.

Conclusion : The HbA1c level was independent risk factors to ESRD in DM patients. The risk for ESRD was increased at the level of HbA1c 6.5%.

Key Words : 당뇨 당화혈색소 말기신부전

Diabetes Mellitus Hemoglobin A, Glycosylated ESRD