

Association of HbA1c with Long-term Adverse Cardiac Events after Percutaneous Coronary Intervention

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Background/Aims: Glycosylated hemoglobin (HbA1c) is an established marker that associated with cardiovascular risk, even if it is below diagnostic threshold for diabetes mellitus (DM). However, it is still controversial that prediabetic and controlled diabetic level of HbA1c has the association with increased major adverse cardiovascular events (MACE) after percutaneous coronary intervention (PCI). **Methods:** This observational study included total of 9219 patients who underwent PCI for coronary artery disease were enrolled in COACT (Catholic University of Korea: percutaneous coronary intervention) registry from 8 centers in Korea. 1647 non DM patients were divided according to tertile of HbA1c (group I, II, III) and 684 controlled DM patients (6.5 ≤ HbA1c <7.0%, group IV) are compared with other groups in MACE; composite of cardiac death, non-fatal myocardial infarction (MI) and target lesion revascularization (TLR). **Results:** During 22 months median follow-up, there were significant differences in MACE (group I: II: III: IV; 7.8%: 9.7%: 10.6%: 11.7%, $p=0.037$) and cardiac death (2.2%: 2.2%: 3.5%: 4.7%, $p=0.021$) in overall patients. In subanalysis, there were no significant differences in MACE ($p=0.367$), between group III and IV by unadjusted Cox regression analysis. **Conclusions:** We suggest that HbA1c is strongly associated with long-term adverse cardiac events treated with PCI in prediabetes patients. Moreover, there was no significant difference in the risk of adverse cardiac event rate between unconscious DM group and known diabetes group in good control when they were categorized by HbA1c.

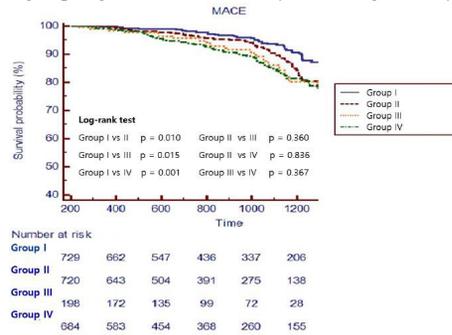


Figure 2. Kaplan-Meier curves showing event-free survival from MACE after PCI during the 4-year follow-up

Cardiac structural or functional changes associated with CHA2DS2-VASc scores in atrial fibrillation

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Background/Aims: CHA2DS2-VASc is the most widely accepted scoring system for atrial fibrillation (AF) to assess stroke risk, although little has been revealed regarding the accompanying cardiac functional/structural changes. This echocardiography study was undertaken to understand the changes related to CHA2DS2-VASc scores. **Methods:** A total of 4,795 nonvalvular AF patients were enrolled for the cohort, from which 591 were excluded as they did not meet the inclusion criteria. Based on the CHA2DS2-VASc scores, the remaining 4,204 patients included in the study were divided into 4 groups: 0 to 1, [n=991]; 2 to 3, [n=1,642]; 4 to 6, [n=1,407]; 7 to 9 [n=164]. **Results:** Increase in the left ventricular mass index and prevalence of left ventricular hypertrophy (LVH) were observed with elevating CHA2DS2-VASc scores ($p<0.05$ for all). Diastolic parameters such as left atrial volume index (LAVI) and the ratio of early diastolic mitral inflow velocity to early diastolic velocity of the mitral annulus (E/E') also increased significantly in the higher CHA2DS2-VASc score groups ($p<0.001$ for all). LVH (HR, 3.609; CI 2.426–5.369; $p<0.001$) and E/E' (HR, 1.087; CI 1.054–1.121; $p<0.001$) were independent risk factors for CHA2DS2-VASc scores 2 or higher. **Conclusions:** Our findings suggest that increasing CHA2DS2-VASc scores are associated with impaired diastolic function that may represent high left atrial pressure favoring thrombotic propensity.

Table. Echocardiographic parameters of nonvalvular atrial fibrillation patients with 4 different CHA2DS2-VASc score categories

	All (n = 4,204)	Group 1 CHA2DS2-VASc Score 0-1 (n=991)	Group 2 CHA2DS2-VASc Score 2-3 (n=1,642)	Group 3 CHA2DS2-VASc Score 4-6 (n=1,407)	Group 4 CHA2DS2-VASc Score 7-9 (n=164)	p value
LVEF (%)	52±16	52±16	52±16	53±16	53±16	0.765
LVEDD (mm)	50±6	51±6	50±6	49±6	48±6	<0.001*
LVEDS (mm)	35±10	36±8	35±8	34±13	33±6	<0.001*
LVEDV (mL)	77±37	88±36	77±36	71±39	63±27	<0.001*
LVESV (mL)	43±31	49±32	43±31	39±30	34±21	<0.001*
LA diameter (mm)	45±16	43±15	46±15	45±17	46±16	<0.001*
LVMi (g/m ²)	97±31	94±27	98±34	99±30	101±27	0.002*
RWT	0.37±0.12	0.36±0.07	0.37±0.13	0.38±0.14	0.38±0.07	0.003*
LAVI (mL/m ²)	49±22	43±19	49±22	53±24	56±27	<0.001*
E/E'	13±6	11±5	13±5	15±7	17±8	<0.001*
LVH, n (%)	1340 (32)	193 (20)	506 (31)	560 (40)	81 (49)	<0.001*
High RWT, n (%)	823 (20)	167 (17)	302 (18)	308 (22)	46 (28)	<0.001*

LVEF: ejection fraction, LVEDV: left ventricular end diastolic dimension, LVESV: left ventricular end systolic dimension, LVEDV: left ventricular end diastolic volume, LVESV: left ventricular end systolic volume, LVMi: left ventricular mass index, LAVI: left atrial volume index, E/E': the ratio of early diastolic mitral inflow velocity to early diastolic velocity of the mitral annulus, RWT: relative wall thickness

* p < 0.05

