Cardiovascular Risk Assessments in Patients with Diabetic-related Complications

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Background and objective: Cardiovascular disease is the most serious complication of diabetes; the risk of developing coronary artery disease within 10 years of developing type 2 diabetes is 2-4 times higher than that of the general population. 3.4 times the risk of dying from heart disease and three times the risk of stroke. The aim of this study was to investigate the associations between common complications and lifestyle habits in patients with type 2 diabetes, including the incidence and predictors of ischemic heart disease.

Methods/intervention: This is a retrospective study, divided into three categories according to the common complications of diabetes: including patient group (1) uncomplicated (CON) group (2) diabetic peripheral neuropathy (DPN) group (3) with other Diabetes-Related Complications (COM) group. A total of 250 outpatients with type 2 diabetes were treated and cared. In addition, demographic data, lifestyle habits, blood pressure, biochemical test values, and the Framingham Risk Score (FRS) were obtained.

Results: The patient groups were mainly divided into 143-bit CON group, 52-bit DPN group, and 55-bit COM group. In the 2014 Diabetes Diagnosis Year, which predicted the chance of developing ischemic heart disease within 10 years, men were found to have a risk chance, while women had 12.61%. After seven years of follow-up, the risk of the disease was about 17%-20% for men and about 11%-14% for women. Furthermore, we explore the association of the group of patients with the probability of developing ischemic heart disease within ten years of the year of diagnosis. People in the CON group had a significantly lower risk of developing the disease than those in the COM group (16.23% vs 24.23%, p = 0.0001); those with > 3 and 3 good lifestyle habits had a significantly lower risk than those with ≤2 people (17.85%, 17.07% vs 24.94%, p = 0.003) (Figure). The table shows multiple logistic regression found that the risk of ischemic heart disease within 10 years in the CON group was significantly reduced by 6.82% (95%CI = -10.11~-3.53, p = 0.000). Women's risk was 7.78% lower than that of men (95%CI = -10.54~-5.02, p = 0.000). Further, three or more good lifestyle habits were associated with a lower risk of ischemic heart disease (p = 0.008 and p = 0.006).
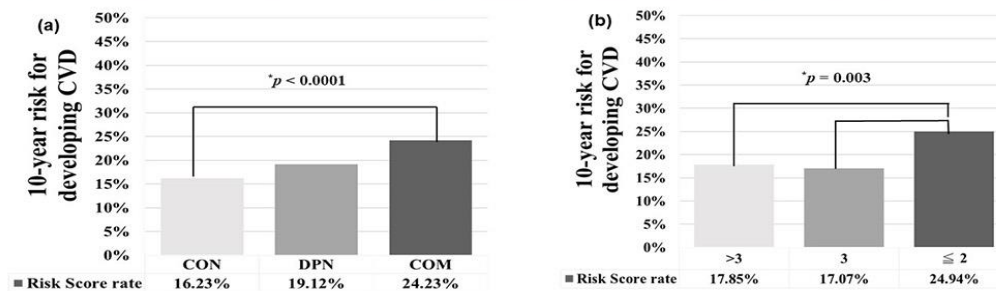
Figure. (a)The Framingham risk score in the DPN, COM, and CON groups; (b) The Framingham risk score in the good lifestyle habits groups.

Notes: Baseline 2014years. *Statistically significant.

Abbreviations: CON, Without complication; COM, With other diabetic-related complications; DPN, Diabetic peripheral neuropathy.

Table. Multiple linear regression analysis for diabetic patients with 10-year risk of cardiovascular diseases

Variables	Univariate		Multivariate	
	β (95%CI)	p-value	β (95%CI)	p-value
Sex				
Female vs Male	-9.26 (-12.04~-6.48)	0.000	-7.78 (-10.54~-5.02)	0.000
Patient groups				
CON vs COM	-7.99 (-11.52~-4.48)	0.000	-6.82 (-10.11~-3.53)	0.000
DPN vs COM	-5.11 (-9.38~-0.85)	0.019	-3.77 (-7.72~0.18)	0.061
Good lifestyle habits				
> 3 vs ≤2	-7.09 (-11.42~-2.76)	0.001	-5.46 (-9.48~-1.44)	0.008
3 vs ≤2	-7.86 (-12.63~-3.09)	0.001	-6.11 (-10.48~-1.74)	0.006

Abbreviations: CON, Without complication; COM, With other diabetic-related complications; DPN, Diabetic peripheral neuropathy.

Conclusions/lessons learned: As a consequence of inadequate multifactorial management, people with diabetes remain at significantly higher cardiovascular risk compared with people without diabetes and CVD is a major cause of comorbidity and death among people with diabetes. The study confirmed that women, without complication patients, and people with good living habits had a relatively low 5-8% chance of developing CVD after 10 years. Given the large burden that diabetes exerts on healthcare systems as a driver of CVD, the identification of new strategies to monitor and control diabetes. In clinical applications, FRS can identify and prevent CVD in advance and reduce the incidence of heart disease.

Keywords: Cardiovascular risk assessment, Diabetes Complications, Framingham risk score, lifestyle

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