



High density lipoprotein levels is associated with Left ventricular Ejection fraction in Type 2 Diabetic Patients

Eui-Hyun Kim, Hyun-Ae Seo

Internal medicine, Daegu Fatima Hospital, Daegu, Republic of Korea

Aims

Considering the high prevalence and significant morbidity and mortality of heart failure in type 2 diabetic patients, identification of risk factors for cardiac dysfunction is important. The ejection fraction represents how well the heart is pumping out blood and is used to diagnose heart failure. In this study, we investigated the factors associated with Left ventricular ejection fraction (LVEF) in type 2 diabetic patients.

Method

A total of 369 type 2 diabetes patients were included in the present study. We conducted trans-thoracic doppler echocardiography for evaluating cardiac function. Height, body weight, blood pressure, biochemical markers were measured for each patient.

Results

Table 1. Basal characteristics of total subjects

	Total Type 2 DM (N=369)	Type 2 DM with normal Diastolic heart function (N=102)
Age (years)	61.24±12.27	59.54±12.57
Sex, n (males/females)	168/201	48/54
BMI (kg/m ²)	23.51±3.61	23.34±3.92
SBP (mmHg)	125.40±15.27	122.06±13.74
DBP (mmHg)	78.17±12.78	76.02±10.75
LVEF (%)	58.63±9.15	56.87±11.24
Hemoglobin (g/dl)	12.37±2.02	12.72±1.88
FBS (mg/dl)	20.74±14.17	163.84±77.61
Hba1c (%)	1.10±0.78	9.77±2.60
BUN (mg/dl)	9.36±2.37	19.40±9.34
Cr (mg/dl)	105.82±40.57	1.00±0.45
LDL (mg/dl)	45.90±17.20	102.01±38.16
HDL (mg/dl)	151.42±91.00	47.51±18.27
TG (mg/dl)	171.46±51.34	140.22±84.99
T-chol (mg/dl)	170.27±80.41	169.09±48.42
Urine ACR	346.81±1004.00	230.98±626.45
Somking Hx		
Nonsmoker	220	67
Ex-smoker	55	16
Current smoker	58	19
Hypertension, n (%)	199(53.9%)	55(53.9%)
Lipid lowering agent use, n (%)	154(41.7%)	35(34.3%)

Table 2. Correlation between LVEF and biochemical markers in total type 2 diabetic patients

	r	P
Age	0.007	0.892
BMI	-0.045	0.386
SBP	-0.051	0.329
DBP	-0.052	0.320
Hemoglobin	0.002	0.967
BUN	-0.029	0.589
Cr	-0.112	0.035
FBS	-0.057	0.330
Hba1c	-0.083	0.126
LDL	0.027	0.610
HDL	0.163	0.002*
TG	-0.082	0.128
T-chol	0.043	0.423
Urine ACR	-0.062	0.261

* P < 0.05

Table 3. Correlations between LVEF and lipid profiles in total type 2 diabetic patients (Adjusted by age, BMI, Cr, Hb and presence of hypertension)

	r	P
LDL	0.023	0.683
HDL	0.161	0.003 *
TG	-0.074	0.179
T-chol	0.052	0.345

* P < 0.05

Table 4. Correlation between LVEF and biochemical markers in type 2 diabetic patients with normal diastolic heart function

	r	P
Age	-0.071	0.476
BMI	-0.123	0.219
SBP	-0.105	0.295
DBP	-0.109	0.274
Hemoglobin	-0.020	0.838
BUN	-0.290	0.003 □
Cr	-0.389	0.000 *
FBS	0.007	0.951
Hba1c	-0.130	0.206
LDL	0.055	0.582
HDL	0.246	0.013*
TG	-0.217	0.029 *
T-chol	0.049	0.621
Urine ACR	-0.078	0.436

* P < 0.05

Table 5. Correlations between LVEF and lipid profiles in type 2 diabetic patients with normal diastolic heart function (Adjusted by age, BMI, Cr, Hb and presence of hypertension)

	r	P
LDL	0.028	0.790
HDL	0.206	0.045 *
TG	-0.089	0.393
T-chol	0.040	0.704

* P < 0.05

Conclusion

In the present study, we found that HDL level is significantly associated with LVEF in type 2 diabetic patients with or without diastolic heart failure. This suggests that the treatment for raising HDL might have a role in the improvement of heart function in type 2 diabetic patients.

