

Supplementary Information

Close linkage between serum uric acid and cardiac dysfunction in patients with ischemic heart disease according to covariance structure analysis

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Supplementary Table S1. The results of the multiple regression analysis to identify the clinical factors influencing the LVEF value

R ² =0.083	Non-Standard Coefficient		Standard Regression Coefficient	Test statistic	P-value	95% CI	VIF
	Regression Coefficient	Standard Error					
Age	0.157	0.034	0.161	4.589	< 0.001	0.090 to 0.224	1.555
Gender	-1.526	0.920	-0.051	-1.658	0.098	-3.331 to 0.280	1.190
BMI	0.317	0.085	0.117	3.738	< 0.001	0.151 to 0.483	1.238
eGFR	0.113	0.021	0.182	5.438	< 0.001	0.072 to 0.154	1.421
UA	-0.762	0.243	-0.098	-3.137	0.002	-1.238 to -0.285	1.232
TG	0.009	0.003	0.091	3.083	0.002	0.003 to 0.014	1.117
AO sys	0.046	0.013	0.106	3.574	< 0.001	0.021 to 0.071	1.110
HbA1c	-1.399	0.309	-0.132	-4.526	< 0.001	-2.006 to -0.793	1.085
Smoking	-0.970	0.446	-0.066	-2.175	0.030	-1.845 to -0.095	1.159
constant	40.957	4.863	-	8.422	< 0.001	31.416 to 50.499	-

R²: adjusted coefficient of determination, CI: confidence interval, VIF: variance inflation factor.

LVEF, left ventricular ejection fraction; BMI, body mass index; eGFR, estimated glomerular filtration rate; UA, uric acid; TG, triglycerides; AO sys, Systolic blood pressure in the Aorta; HbA1c, hemoglobin A1c

Supplementary Table S2. The results of the multiple regression analysis to identify the clinical factors influencing with or without the vessel disease

R ² =0.070	Non-Standard Coefficient		Standard Regression Coefficient	Test statistic	P-value	95% CI	VIF
	Regression Coefficient	Standard Error					
Age	0.008	0.003	0.085	2.446	0.015	0.002 to 0.014	1.600
Gender	0.071	0.084	0.025	0.841	0.400	-0.094 to 0.235	1.186
BMI	-0.015	0.008	-0.059	-1.912	0.056	-0.030 to 0.000	1.239
eGFR	-0.004	0.002	-0.080	-2.381	0.017	-0.008 to -0.001	1.509
UA	0.054	0.021	0.078	2.536	0.011	0.012 to 0.096	1.247
TG	-0.001	0.000	-0.062	-2.137	0.033	-0.001 to 0.000	1.112
AO sys	0.004	0.001	0.099	3.374	0.001	0.002 to 0.006	1.132
HbA1c	0.159	0.028	0.161	5.609	< 0.001	0.104 to 0.215	1.090
Smoking	0.067	0.041	0.048	1.637	0.102	-0.013 to 0.147	1.157
constant	-0.924	0.441	-	-2.098	0.036	-1.789 to -0.060	-

R²: adjusted coefficient of determination, CI: confidence interval, VIF: variance inflation factor.

BMI, body mass index; eGFR, estimated glomerular filtration rate; UA, uric acid; TG, triglycerides; AO sys, Systolic blood pressure in the Aorta; HbA1c, hemoglobin A1c

Supplementary Table S3. The results of the multiple regression analysis to identify the clinical factors influencing the UA level

R ² =0.189	Non-Standard Coefficient		Standard Regression Coefficient	Test statistic	P-value	95% CI	VIF
	Regression Coefficient	Standard Error					
Age	-0.013	0.004	-0.105	-3.161	0.002	-0.021 to -0.005	1.570
Gender	0.543	0.110	0.141	4.935	< 0.001	0.327 to 0.758	1.168
BMI	0.053	0.010	0.153	5.235	< 0.001	0.033 to 0.073	1.224
eGFR	-0.026	0.002	-0.322	-10.565	< 0.001	-0.030 to -0.021	1.329
TG	0.002	0.000	0.150	5.406	< 0.001	0.001 to 0.002	1.099
AO sys	-0.004	0.002	-0.067	-2.395	0.017	-0.007 to -0.001	1.117
HbA1c	-0.089	0.038	-0.066	-2.372	0.018	-0.163 to -0.015	1.099
Smoking	0.088	0.054	0.046	1.628	0.104	-0.018 to 0.193	1.161
LVEF	-0.011	0.004	-0.086	-3.137	0.002	-0.018 to -0.004	1.090
constant	8.274	0.553	-	14.958	< 0.001	7.189 to 9.360	-

R²: adjusted coefficient of determination, CI: confidence interval, VIF: variance inflation factor.

UA, uric acid; BMI, body mass index; eGFR, estimated glomerular filtration rate; TG, triglycerides; AO sys, Systolic blood pressure in the Aorta; HbA1c, hemoglobin A1c; LVEF, left ventricular ejection fraction

Supplementary Table S4. The results of Pearson's product-moment correlation coefficient analysis among the clinical factors

	Age	Gender	BMI	TG	Smoking	AO sys	eGFR	HbA1c	UA
Age	-	-0.205 ^{**}	-0.255 ^{**}	-0.174 ^{**}	-0.186 ^{**}	0.223 ^{**}	-0.462 ^{**}	0.075 ^{**}	-0.044
Gender	-0.205 ^{**}	-	0.137 ^{**}	0.055 ^{**}	0.274 ^{**}	-0.208 ^{**}	0.091 ^{**}	0.016	0.165 ^{**}
BMI	-0.255 ^{**}	0.137 ^{**}	-	0.175 ^{**}	0.039	0.025	0.032	0.199 ^{**}	0.185 ^{**}
TG	-0.174 ^{**}	0.055 [*]	0.175 ^{**}	-	0.187 ^{**}	0.050	0.052	0.098 ^{**}	0.166 ^{**}
Smoking	-0.186 ^{**}	0.274 ^{**}	0.039	0.187 ^{**}	-	-0.048	0.131 ^{**}	0.070 ^{**}	0.079 ^{**}
AO sys	0.223 ^{**}	-0.208 ^{**}	0.025	0.050	-0.048	-	-0.194 ^{**}	0.053	-0.064 [*]
eGFR	-0.462 ^{**}	0.091 ^{**}	0.032	0.052	0.131 ^{**}	-0.194 ^{**}	-	0.029	-0.287 ^{**}
HbA1c	0.075 ^{**}	0.016	0.199 ^{**}	0.098 ^{**}	0.070 ^{**}	0.053	0.029	-	-0.034
UA	-0.044	0.165 ^{**}	0.185 ^{**}	0.166 ^{**}	0.079 ^{**}	-0.064 [*]	-0.287 ^{**}	-0.034	-

BMI, body mass index; TG, triglycerides; AO sys, Systolic blood pressure in the Aorta; eGFR, estimated glomerular filtration rate; HbA1c, hemoglobin A1c; UA, uric acid

P value: **P* < 0.05, ***P* < 0.01

Supplementary Table S5. Correlation coefficients of each clinical factor from the results of path model A

Age	↔	Gender	-0.205 ^{**}
	↔	BMI	-0.255 ^{**}
	↔	TG	-0.172 ^{**}
	↔	Smoking	-0.186 ^{**}
	↔	AO sys	0.233 ^{**}
	↔	eGFR	-0.466 ^{**}
	↔	HbA1c	0.080 ^{**}
	↔	UA	-0.044
Gender	↔	BMI	0.137 ^{**}
	↔	TG	0.056 [*]
	↔	Smoking	0.274 ^{**}
	↔	AO sys	-0.211 ^{**}
	↔	eGFR	0.095 ^{**}
	↔	HbA1c	0.013
	↔	UA	0.164 ^{**}
BMI	↔	TG	0.174 ^{**}
	↔	Smoking	0.039
	↔	AO sys	0.035
	↔	eGFR	0.028
	↔	HbA1c	0.200 ^{**}
	↔	UA	0.185 ^{**}
TG	↔	Smoking	0.187 ^{**}
	↔	AO sys	0.049
	↔	eGFR	0.052
	↔	HbA1c	0.098 ^{**}

	↔	UA	0.166 ^{**}
Smoking	↔	AO sys	-0.046
	↔	eGFR	0.129 ^{**}
	↔	HbA1c	0.070 ^{**}
	↔	UA	0.080 ^{**}
AO sys	↔	eGFR	-0.203 ^{**}
	↔	HbA1c	0.056 [*]
	↔	UA	-0.060 [*]
eGFR	↔	HbA1c	0.027
	↔	UA	-0.288 ^{**}
HbA1c	↔	UA	-0.033

P value: ^{*}*P* < 0.05, ^{**}*P* < 0.01

BMI, body mass index; TG, triglycerides; AO sys, Systolic blood pressure in the Aorta; eGFR, estimated glomerular filtration rate; HbA1c, hemoglobin A1c; UA, uric acid; LVEF, left ventricular ejection fraction

Supplementary Table S6. Correlation coefficients of each clinical factor from the results of path model B

Age	↔	Gender	-0.205 ^{**}
	↔	BMI	-0.255 ^{**}
	↔	TG	-0.172 ^{**}
	↔	AO sys	0.234 ^{**}
	↔	Smoking	-0.186 ^{**}
	↔	eGFR	-0.466 ^{**}
	↔	HbA1c	0.081 ^{**}
	↔	LVEF	0.067 [*]
Gender	↔	BMI	0.137 ^{**}
	↔	TG	0.056 [*]
	↔	AO sys	-0.211 ^{**}
	↔	Smoking	0.274 ^{**}
	↔	eGFR	0.095 ^{**}
	↔	HbA1c	0.014
	↔	LVEF	-0.110 ^{**}
BMI	↔	TG	0.174 ^{**}
	↔	AO sys	0.034
	↔	Smoking	0.039
	↔	eGFR	0.028
	↔	HbA1c	0.200 ^{**}
	↔	LVEF	0.053
TG	↔	AO sys	0.049
	↔	Smoking	0.187 ^{**}
	↔	eGFR	0.052

	↔	HbA1c	0.098 ^{**}
	↔	LVEF	0.048
AO sys	↔	Smoking	-0.043
	↔	eGFR	-0.204 ^{**}
	↔	HbA1c	0.056 [*]
	↔	LVEF	0.128 ^{**}
Smoking	↔	eGFR	0.129 ^{**}
	↔	HbA1c	0.071 ^{**}
	↔	LVEF	-0.089 ^{**}
eGFR	↔	HbA1c	0.026
	↔	LVEF	0.127 ^{**}
HbA1c	↔	LVEF	-0.077 ^{**}

P value: ^{*}*P* < 0.05, ^{**}*P* < 0.01

UA, uric acid; BMI, body mass index; TG, triglycerides; AO sys, Systolic blood pressure in the Aorta; eGFR, estimated glomerular filtration rate; HbA1c, hemoglobin A1c; LVEF, left ventricular ejection fraction

Supplementary Table S7. The results of path model C

Clinical Factor		Estimate	Standard error	Test statistic	P-Value	Standard regression coefficient Direct Effect
UA (R ² =0.046)	← UA lowering agents	0.127	0.098	1.297	0.195	0.035
	← Diuretics	0.521	0.099	5.291	< 0.001	0.147
	← LVEF	-0.014	0.004	-3.648	< 0.001	-0.108

The results (direct effect) of the path model theoretically proposed analysis to identify the clinical factors influencing between each other (see Supplementary Fig.S1)

R²: squared multiple correlations.

Correlation coefficients of each clinical factor

UA lowering agents	↔	Diuretics	0.174 ^{**}
	↔	LVEF	-0.115 ^{**}
Diuretics	↔	LVEF	-0.286 ^{**}

P value: ^{**}P < 0.01

UA, uric acid; LVEF, left ventricular ejection fraction

Supplementary Figure Legend

Supplementary Figure S1. The path model [C]: An explanatory drawing of the possible cascade from the medication profiles to UA

This path has a coefficient showing the standardized coefficient of a regressing independent variable on a dependent variable of the relevant path. These variables indicate standardized regression coefficients (direct effect) [**bold typeface indicates remarkable values**], squared multiple correlations [*narrow italics*] and correlations among exogenous variables [green].

Path model C

