

Supplementary material

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Table S1. Clinical characteristics of study group

Parameter	Mean (SD)	Median (IQR)
<i>Baseline characteristics</i>		
Age, years	38.0 (9.6)	
BMI, kg/m ²		23.39 (21.61 - 27.25)
body weight, kg		67.0 (60.0 - 79.0)
DDI, U		40 (32 - 56)
DDI per body weight kg, U/kg		0.62 (0.46 - 0.73)
diabetes duration, years	21.8 (11.3)	
height, cm	168.9 (9.9)	
waist circumference, cm		80 (76 - 90)
<i>Biochemistry</i>		
ACR, mg/g		4.45 (2.55 - 12.55)
ALT, U/l		18.10 (13.25 - 27.00)
AST, U/l		20.95 (17.05 - 26.15)
CRP, mg/l		2.25 (0.90 - 4.55)
eGFR, ml/min/1,73m ²	104.7 (19.9)	

GGTP, U/l		19.70 (12.20 - 37.95)
HbA1c, %		8.05 (7.15 - 9.90)
HDL, mmol/l	1.52 (0.34)	
LDL, mmol/l	2.90 (0.74)	
non-HDL, mmol/l	3.34 (0.92)	
NT-proBNP, pg/ml		46.05 (27.00 - 77.10)
TG, mg/dl		89.90 (66.43 - 124.88)
total cholesterol, mmol/l	4.87 (0.98)	
TSH, μ IU/ml		1.57 (0.83 - 2.20)
uric acid, μ mol/l		255.65 (200.90 - 325.20)
<i>Fatty liver disease</i>		
FLI		15.17 (6.84 - 43.07)
<i>Experimental biomarker</i>		
APOC3, ng/ml		23.23 (15.80 - 33.43)
<i>Echocardiography</i>		
E/e [*]	6.8 (1.9)	6.75 (5.40 - 8.00)
EF, %	65% (4%)	
IVSD, mm	13 (2)	
LA Vol, ml	45.0 (11.4)	
LA Vol index, ml/m ²	24.1 (4.8)	
LV EDV, ml	79 (15)	
LV ESV, ml	28 (6)	
LV mass, g	131.6 (35.4)	
LV mass index, g/m ²	71.1 (13.0)	

LVDD, mm	46 (4)	
LVSD, mm	30 (4)	
mean e', cm/s	12 (3)	
mitral A, cm/s	64 (17)	
mitral DT, ms*	234 (43)	230 (200 – 245)
mitral E, cm/s	81 (20)	
mitral E/A*	1.36 (0.43)	1.25 (1.04 - 1.67)
RV TAM, mm	26 (3)	
RVDD, mm	25 (3)	
TDI bas lat a', cm/s	8 (3)	
TDI bas lat e', cm/s*	14 (3.5)	14 (11 -16)
TDI bas lat s', cm/s*	11 (2.8)	10 (9 - 12)
TDI bas sept a', cm/s*	8.5 (1.5)	8 (7 - 10)
TDI bas sept e', cm/s	11 (3)	
TDI bas sept s', cm/s*	9 (1.5)	8.5 (8 - 9)
Vp, cm/s	50 (6)	

Results are presented as mean and standard deviation (SD) for normally distributed continuous variables and median and interquartile range (IQR) for non-normally distributed continuous variables with the exception of E/e', mitral DT, mitral E/A, TDI bas lat e', TDI bas lat s', TDI bas sept a' and TDI bas sept s' that were presented as well as mean and SD to facilitate interpretation.

ACR albumin/creatinine ratio, mg/g;

ALT alanine aminotransferase, U/l;

APOC3 apolipoprotein C3, ng/ml;

AST aspartate aminotransferase, U/l;

BMI body mass index, kg/m²;

CRP C-reactive protein, mg/l;

DDI daily dose of insulin, U;

EF ejection fraction, %;

eGFR estimated glomerular filtration rate, ml/min/1.73 m²;

FLI fatty liver index;

GGTP gamma-glutamyltransferase, U/l;

HbA1c glycated hemoglobin, %;

HDL high-density lipoprotein, mmol/l;

IVSD intraventricular septum thickness at end-diastole, mm;

LA Vol index left atrium volume index, ml/m²;

LA Vol left atrium volume, ml;

LDL low-density lipoprotein, mmol/l;

LN APOC3 natural logarithm of apolipoprotein C3;

LV EDV left ventricle end-diastolic volume, ml;

LV ESV left ventricle end-systolic volume, ml;

LV mass left ventricle mass, g;

LV mass index left ventricle mass index, g/m²;

LVDD left ventricular diameters at diastole, mm;

LVSD left ventricular diameters at systole, mm;

mitral A late diastolic mitral inflow velocity, cm/s;

mitral DT deceleration time of mitral E velocity, ms;

mitral E early diastolic mitral inflow velocity, cm/s;

non-HDL non-high-density lipoprotein, mmol/l;

NT-proBNP N-terminal prohormone of brain natriuretic peptide, pg/ml;

RV TAM tricuspid annular motion, mm;

RVDD right ventricular diameters at diastole, mm;

TDI bas lat a' lateral mitral annulus peak late diastolic velocity, cm/s;

TDI bas lat e' lateral mitral annulus early diastolic velocity, cm/s;

TDI bas sept a' septal mitral annulus peak late diastolic velocity, cm/s,

TDI bas sept e' septal mitral annulus early diastolic velocity, cm/s;

TDI bas sept s' septal mitral annulus peak systolic velocity, cm/s;

TDI lat sept s' lateral mitral annulus peak systolic velocity, cm/s;

TG triglycerides, mg/dl;

TSH thyroid-stimulating hormone, μ IU/ml;

Vp flow velocity propagation at mitral annulus, cm/s.

Table S2. Spearman correlation coefficients between E/e' and potential continuous predictors

Potential predictor	Spearman's r	<i>p</i>
ACR	-0.0064	0.97
adiponectin	0.2891	0.07
age	0.5544	0.01
ALT	-0.0787	0.62
APOC3	0.3099	0.045
AST	-0.0121	0.94
BMI	0.3368	0.03
body height	-0.3147	0.05
body weight	0.1446	0.37
creatinine	-0.1788	0.26
CRP	0.1608	0.31
DDI	0.0565	0.73

DDI/kg	-0.0784	0.63
diabetes duration	0.3024	0.06
eGFR	-0.0569	0.72
FLI	0.1822	0.25
GGTP	-0.0046	0.98
HbA1c	-0.0938	0.55
HDL	-0.1860	0.24
LDL	-0.1110	0.49
non-HDL	-0.1153	0.47
NT-proBNP	0.3713	0.02
TG	0.0008	0.99
total cholesterol	-0.1752	0.27
TSH	-0.0146	0.94
urea	-0.1078	0.50
uric acid	-0.0104	0.95
waist circumference	0.1457	0.36
ACR albumin/creatinine ratio, mg/g;		
ALT alanine aminotransferase, U/l;		
APOC3 apolipoprotein C3, ng/ml;		
AST aspartate aminotransferase, U/l;		
BMI body mass index, kg/m ² ;		
CRP C-reactive protein, mg/l;		
DDI daily dose of insulin, U;		
eGFR estimated glomerular filtration rate, ml/min/1.73 m ² ;		
FLI fatty liver index;		
GGTP gamma-glutamyltransferase, U/l;		
HbA1c glycated hemoglobin, %;		
HDL high-density lipoprotein, mmol/l;		
LDL low-density lipoprotein, mmol/l;		
non-HDL non-high-density lipoprotein, mmol/l;		
NT-proBNP N-terminal prohormone of brain natriuretic peptide, pg/ml;		

TG triglycerides, mg/dl;

TSH thyroid-stimulating hormone, μ IU/ml;

Table S3. Univariable and multivariable linear regression models for the mitral E/e'

Linear regression for the mitral E/e'									
	Univariable analysis			Multivariable analysis			Multivariable analysis		
	β	<i>t</i> value	<i>p</i>	β	<i>t</i> value	<i>p</i>	β	<i>t</i> value	<i>p</i>
				<ul style="list-style-type: none"> All parameters (manual selection) Corrected R ² 0.4614 <i>p</i> = <0.001			<ul style="list-style-type: none"> Stepwise backward elimination Corrected R ² 0.4649 <i>p</i> = <0.001		
Age, years	0.5326	3.9307	< 0.001	0.3193	2.5038	0.02	0.3162	2.4892	0.02
APOC3, ng/ml	0.3444	2.3198	0.03	0.2643	2.1612	0.04	0.2465	2.0513	0.047
BMI, kg/m ²	0.3126	2.0555	0.01	0.3793	1.9326	0.06	0.2429	2.0475	< 0.001
FLI	0.1327	0.8359	0.41	-	-	0.39			
NT-proBNP, pg/ml	0.4909	3.5645	0.01	0.1736	0.8740		0.3422	2.6922	0.01
APOC3 apolipoprotein C3, ng/ml; BMI body mass index, kg/m ² ; FLI fatty liver index; NT-proBNP N-terminal prohormone of brain natriuretic peptide, pg/ml;									

Table S4. Cardiometabolic criteria for the MASLD diagnosis

based on: Rinella ME, Lazarus J V., Ratziu V, et al. *A multisociety Delphi consensus statement on new fatty liver disease nomenclature.* J Hepatol. 2023; 79: 1542-1556.

- 1) BMI of at least 25 kg/m² OR waist circumference of at least 94 cm in men and 80 cm in women OR ethnicity adjusted equivalent

- 2) Fasting serum glucose of at least 5.6 mmol/l OR serum glucose in 2nd hour of OGTT of at least 7.8 mmol/l OR type 2 diabetes OR treatment for type 2 diabetes
- 3) Blood pressure of at least 130/85 mm Hg OR treatment for hypertension
- 4) Plasma triglycerides of at least 1.7 mmol/l OR lipid lowering treatment
- 5) Plasma HDL-cholesterol less or equal to 1.0 mmol/l for men and 1.3 mmol/l for women OR lipid lowering treatment