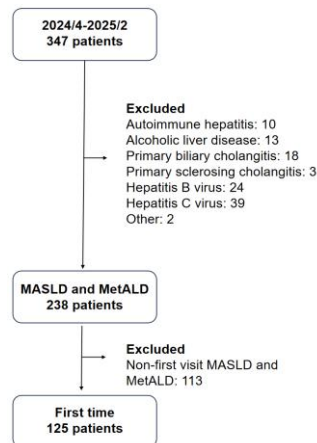
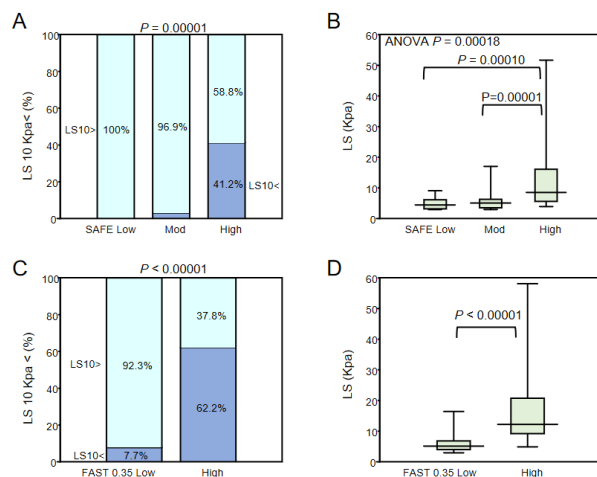


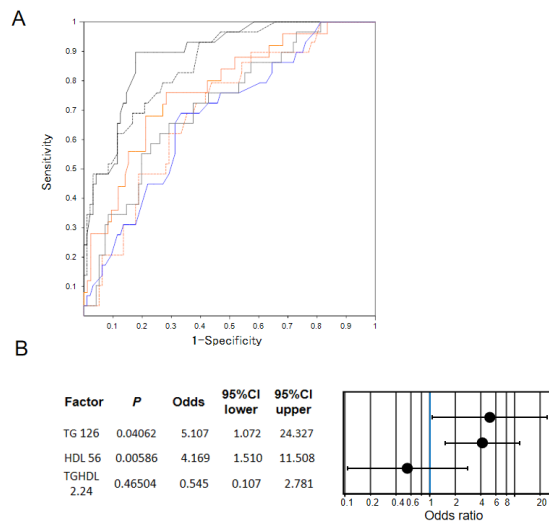
Supplementary Figure Legends



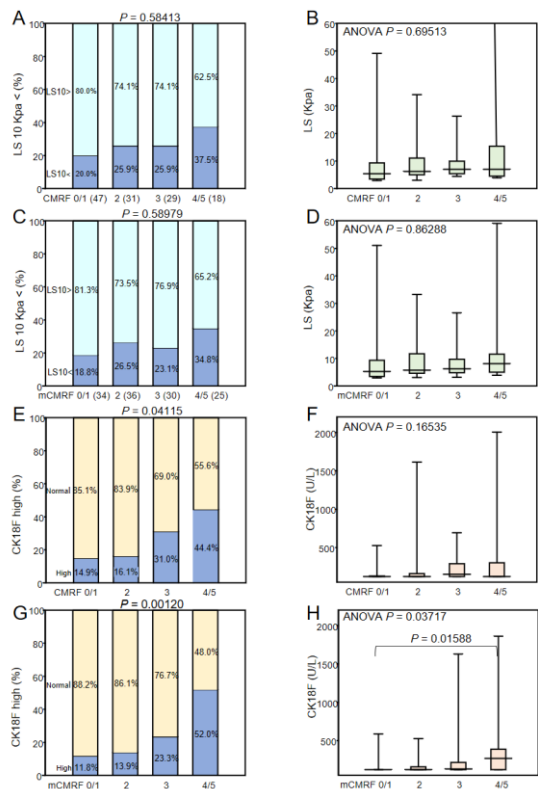
Supplementary Figure 1 Sample selection flow diagram. MASLD: Metabolic dysfunction-associated steatotic liver disease; MetALD: Metabolic dysfunction and alcohol-related liver disease.



Supplementary Figure 2 Relation between steatosis-associated fibrosis estimator score, FibroScan-aspartate aminotransferase score, and liver stiffness. A: Percentage of liver stiffness (LS) > 10 Kpa according to steatosis-associated fibrosis estimator (SAFE) score grade; B: Titer of LS (Kpa) according to SAFE score. SAFE score: (1) Low: < 0; (2) Moderate: 0–100; and (3) High: > 100; C: Percentage of LS > 10 Kpa according to FibroScan-aspartate aminotransferase (FAST) score grade; D: Titer of LS (Kpa) according to FAST score. FAST score: (1) Low: < 0.35; and (2) High: > 0.35. ANOVA: Analysis of variance; FAST: FibroScan-aspartate aminotransferase; LS: Liver stiffness; SAFE: Steatosis-associated fibrosis estimator.

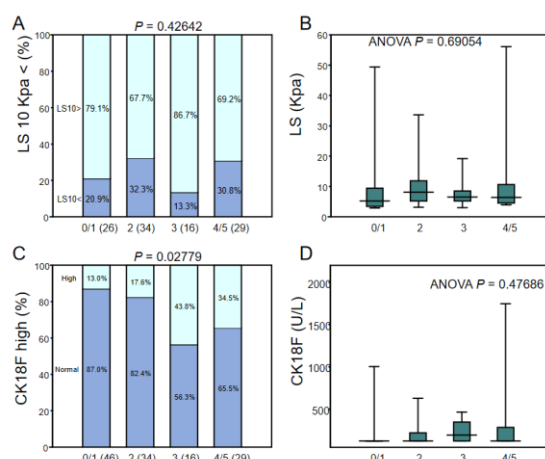


Supplementary Figure 3 Cut-off value for high cytokeratin 18 fragment. A: Receiver operating characteristic analysis to determine the relationship between cytokeratin 18 fragment (CK18F) and clinical factors; B: Effect of high triglycerides (TG) (≥ 126 mg/dL), low high-density lipoprotein (HDL) (≤ 56 mg/dL), and TG/HDL (≥ 2.24) on high CK18F was evaluated using multivariate logistic regression analysis.



Supplementary Figure 4 Relation between liver stiffness, cytokeratin 18 fragment, and modified cardiometabolic risk factor groups. A: Rate of liver stiffness (LS) > 10

Kpa (%) in the cardiometabolic risk factor (CMRF) group; B: Titer of LS (Kpa) in the CMRF group; C: Rate of LS > 10 Kpa in the modified CMRF (mCMRF) group; D: Titer of LS (Kpa) in the mCMRF group; E: Rate of high cytokeratin 18 fragment (CK18F) (%) in the CMRF group; F: Titer of CK18F (U/L) in the CMRF group; G: Rate of high CK18F (%) in the mCMRF; H: Titer of CK18F (U/L) in the mCMRF group. The modified cardiometabolic risk factor (mCMRF) groupings were 0 point and 1 point as 0/1 group, 4 points and 5 points as 4/5 group, and 2 points and 3 points as they were. Cardiometabolic risk factor: The 0/1 group is 47 patients, 2 group is 31 patients, 3 group is 29 patients, and 4/5 is 18 patients. The mCMRF: The 0/1 group comprised 34 patients, 2 group comprised 36 patients, 3 group comprised 30 patients, and 4/5 group comprised 25 patients. ANOVA: Analysis of variance; CMRF: Cardiometabolic risk factor; LS: Liver stiffness; mCMRF: Modified cardiometabolic risk factor.



Supplementary Figure 5 Relation between liver stiffness, cytokeratin 18 fragment, and BMI24CMRF groups. A: Rate of liver stiffness (LS) > 10 Kpa (%) in the BMI24CMRF group; B: Titer of LS (Kpa) in the BMI24CMRF group; C: Rate of high cytokeratin 18 fragment (CK18F) (%) in the BMI24CMRF group; D: Titer of CK18F (U/L) in the BMI24CMRF group. Among the cardiometabolic risk factor (CMRF) criteria, when only body mass index (BMI) was changed to 24 or higher, the new CMRF (BMI24CMRF) classification was 26 patients in group 0/1, 34 patients in group 2, 16 patients in group 3, and 29 patients in group 4/5. ANOVA: Analysis of variance; CK18F: Cytokeratin 18 fragment; LS: Liver stiffness.

Supplementary Table 1 Relation between liver stiffness and clinical factors

Liver stiffness 10 Kpa		High	Low	P value
AST	<i>n</i>	29	86	0.00146
	Median	47.0	31.5	
	Q1 (25%)	35.3	23.0	
	Q3 (75%)	89.8	54.0	
ALT	<i>n</i>	29	86	0.72307
	Median	40.0	43.0	
	Q1 (25%)	23.0	21.0	
	Q3 (75%)	66.3	75.0	
AST/ALT	<i>n</i>	29	86	0.00014
	Median	1.347	0.8944	
	Q1 (25%)	1.007	0.6562	
	Q3 (75%)	1.549	1.2222	
Steatosis-associated fibrosis estimator score	<i>n</i>	29	86	< 0.00001
	Median	197.72	92.89	
	Q1 (25%)	166.95	25.95	
	Q3 (75%)	323.00	164.93	
TG	<i>n</i>	29	86	0.59740
	Median	112.0	117.5	
	Q1 (25%)	77.8	77.0	
	Q3 (75%)	163.8	202.0	
HDL	<i>n</i>	29	86	0.25407
	Median	49.0	60.5	
	Q1 (25%)	40.5	53.0	
	Q3 (75%)	78.0	70.0	
TG/HDL	<i>n</i>	29	86	0.96918

LDL	Median	1.8333	1.8873	
	Q1 (25%)	1.2524	1.2539	
	Q3 (75%)	3.3470	3.5714	
	<i>n</i>	28	85	0.00104
	Median	88.5	116.0	
sdLDL	Q1 (25%)	72.5	98.3	
	Q3 (75%)	117.5	143.0	
	<i>n</i>	23	66	0.35592
	Median	30.5	36.7	
	Q1 (25%)	18.0	24.7	
sdLDL/LDL	Q3 (75%)	54.8	48.3	
	<i>n</i>	23	66	0.93278
	Median	0.32328	0.3229	
	Q1 (25%)	0.25522	0.2311	
	Q3 (75%)	0.45034	0.3961	

ALT: Alanine aminotransferase; AST: Aspartate aminotransferase; HDL: High-density lipoprotein; LDL: Low-density lipoprotein; Q1: Quartile 1 (25%); Q3: Quartile 3 (75%); sdLDL: Small dense low-density lipoprotein; TG: Triglycerides.

Supplementary Table 2 Cut-off values were set equal to sensitivity and 1-specificity

Factor 1	Factor 2	<i>P</i> value
TG	HDL	0.86861
TG	TG/HDLR	0.30439
TG	Ferritin	0.36317
TG	AST	0.00154
TG	ALT	0.01969
HDL	TG/HDLR	0.76528

HDL	Ferritin	0.38878
HDL	AST	0.03467
HDL	ALT	0.08737
TG/HDLR	Ferritin	0.41696
TG/HDLR	AST	0.00462
TG/HDLR	ALT	0.03699
Ferritin	AST	0.01493
Ferritin	ALT	0.07072
AST	ALT	0.24457

ALT: Alanine aminotransferase; AST: Aspartate aminotransferase; HDL: High-density lipoprotein; HDLR: High-density lipoprotein receptor; TG: Triglycerides.

Supplementary Table 3 Comparison of area under the curve between different clinical factors

Factors	High cytokeratin 18 fragment	Normal	Area under the curve	Cut off	sensitivity
TG	29	96	0.69935	126.9	0.65600
HDL	29	96	0.67978	56.58	0.67532
TG/HDL	29	96	0.71695	2.24	0.65517
Ferritin	25	85	0.77153	265.24	0.72000
Aspartate aminotransferase	29	96	0.89027	49.09	0.82437
Alanine aminotransferase	29	96	0.85632	50.26	0.75410

HDL: High-density lipoprotein; TG: Triglycerides.

Supplementary Table 4 Relation between high cytokeratin 18 fragment and cardiometabolic risk factor

Factor	<i>P</i> value	OR	95%CI lower	Upper	<i>P</i> value	OR	95%CI lower	Upper
Body mass index (> 23 kg/m ²)	0.81421	0.881	0.308	2.525	0.65386	0.780	0.263	2.314
Diabetes mellites	0.30246	1.629	0.644	4.118	0.18078	1.933	0.736	5.077
Hypertension	0.60746	1.260	0.521	3.047	0.42201	1.469	0.575	3.755
TG	0.11656	2.139	0.828	5.530				
HDL	0.25576	1.849	0.641	5.336				
TG (126 mg/dL)					0.03017	2.888	1.107	7.532
HDL (56 mg/dL)					0.00469	3.998	1.530	10.445

Multiple logistics regression assay for cytokeratin 18 fragment. Body mass index, diabetes mellites, triglycerides (TG), and high-density lipoprotein (HDL) were cardiometabolic risk factors in Table 4. High TG (> 126 mg/dL) and low HDL (< 56 mg/dL) were modified criteria (Supplementary Figure 2). HDL: High-density lipoprotein; OR: Odds ratio; TG: Triglycerides.

Supplementary Table 5 Relation between cardiometabolic risk factor, modified cardiometabolic risk factor, liver stiffness, and high cytokeratin 18 fragment

Liver stiffness 10 Kpa		High	Low	<i>P</i> value
Cardiometabolic risk factor	<i>n</i>	29	86	0.17945
	Median	2.0	2.0	
	Q1 (25%)	1.0	1.0	
	Q3 (75%)	3.0	3.0	
mCMRF	<i>n</i>	29	86	0.22886
	Median	2.0	2.0	
	Q1 (25%)	2.0	1.0	
	Q3 (75%)	4.0	3.0	

Cytokeratin 18 fragment (high: > 260 U/L) Normal High *P* value

mCMRF	<i>n</i>	96	29	0.00042
	Median	2.0	3.0	
	Q1 (25%)	1.0	2.0	
	Q3 (75%)	3.0	4.0	

mCMRF: Modified cardiometabolic risk factor; Q1: Quartile 1 (25%); Q3: Quartile 3 (75%).

Supplementary Table 6 Relation between fibrates, modified statins, high triglycerides (> 126 mg/dL), and low high-density lipoprotein (< 56 mg/dL), *n* (%)

Fibrate		Fibrate	<i>n</i> (%)	<i>P</i> value
TG (126 mg/dL)	High	5 (71.4)	49 (41.5)	0.23744
	Normal	2 (28.6)	69 (58.5)	
HDL (56 mg/dL)	Low	5 (71.4)	47 (39.8)	0.12640
	Normal	2 (28.6)	71 (60.2)	
Statin		Statin	<i>n</i> (%)	<i>P</i> value
TG (126 mg/dL)	High	36 (39.6)	18 (52.9)	0.17898
	Normal	55 (60.4)	16 (47.1)	
HDL (56 mg/dL)	Low	40 (44.0)	12 (35.3)	0.38195
	Normal	51 (56.0)	22 (64.7)	

HDL: High-density lipoprotein; TG: Triglycerides.

Supplementary Table 7 Difference between the use of fibrates or statin

Statin/fibrate		Statin and fibrate	Statin or fibrate	<i>n</i> (%)	<i>P</i> value
TG (126 mg/dL)	High	3 (100.0)	17 (48.6)	34 (39.1)	0.08384
	Normal	0 (0.0)	18 (51.4)	53 (60.9)	
HDL (56 mg/dL)	Low	1 (33.3)	15 (42.9)	36 (41.4)	0.94701
	Normal	2 (66.7)	20 (57.1)	51 (58.6)	