Supplementary Table 1. Baseline characteristics of the pilot study cohort of reproducibility and within-session repeatability.

Characteristics	MAFLD patients (N=50)
Age, years	44.3±10.5
Male, n (%)	26 (52)
Body mass index (kg/m^2)	24.6 ± 2.7
Waist circumstance, cm	84.7 ± 7.5
Waist hip ratio	0.88 ± 0.05
Systolic blood pressure, mmHg	126 ± 13
Diastolic blood pressure, mmHg	84 ± 10
Alanine aminotransferase, U/L	28 (15-53)
Aspartate aminotransferase, U/L	27 (19-37)
γ-Glutamyl transpeptidase, U/L	31 (21-63)
Alkaline phosphatase, U/L	80 (74-91)
Total cholesterol, mmol/L	5.05 ± 0.99
Triglycerides, mmol/L	2.13 ± 0.57
HDL-C, mmol/L	1.18 ± 0.27
LDL-C, mmol/L	3.19 ± 0.84
Fasting blood glucose, mmol/L	4.90 ± 0.74
Fasting insulin, μU/mL[†]	7.66 (5.65-10.84)
HOMA-IR[†]	1.57 (1.14-2.27)
Uric acid, μmol/L	376 ± 112
Liver fat content, %	17.6 (7.7-25.6)
Controlled attenuation parameter, dB/m[†]	261 (243-280)
Liver stiffness measurement, kPa[†]	5.4 (4.6-6.5)
Histological characteristics	
Steatosis degree S0/S1/S2/S3, n (%)	0(0)/20(40)/20(40)10(20)
Lobular inflammation L0/L1/L2/L3, n (%)	7(14)/38(76)/5(10)
Ballooning B0/B1/B2, n (%)	18(36)/30(60)/2(4)
Fibrosis stage F0/F1/F2/F3/F4, n (%)	22(44)/23(46)/4(8)/1(2)

HDL-cholesterol, high-density lipoprotein-cholesterol; LDL-cholesterol, low-density lipoprotein-cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance. [†]Continuous variables are expressed as median with IQR for non-Gaussian distribution.

Supplementary Table 2. Within-one-week reproducibility and within-session repeatability of CAP, MRI-PDFF and histology.

Parameter	Slope	Intercept	ICC	CV (%)
CAP				
Within-one-week reproducibility	0.82 (0.75-0.88)	36.04 (17.49-54.58)	0.88 (0.86-0.91)	9.6 (7.9-11.3)
Within-session repeatability				
Intraobserver	0.93 (0.82-1.02)	21.81 (-6.18-49.79)	0.94 (0.89-0.97)	7.2 (5.7-8.8)
Interobserver	0.93 (0.71-1.14)	15.70 (-12.55-50.57)	0.87 (0.82-0.90)	10.5 (8.2-12.8)
MRI-PDFF				
Within-one-week reproducibility	0.94 (0.86-1.01)	0.64 (-0.65-1.94)	0.96 (0.94-0.98)	5.7 (4.8-6.7)
Within-session repeatability				
Intraobserver	0.92 (0.86-1.00)	0.25 (-0.96-1.46)	0.97 (0.95-0.98)	4.8 (3.7-5.8)
Interobserver	0.94 (0.85-1.03)	1.55 (-0.09-3.19)	0.94 (0.91-0.97	6.6 (5.2-7.9)
Histology				
Within-one-week reproducibility	1.03 (0.90-1.15)	0.08 (-0.33-0.17)	0.96 (0.91-0.98)	8.2 (5.2-11.2)
Within-session repeatability				
Intraobserver	0.92 (0.80-1.04)	0.10 (-0.14-0.34)	0.95 (0.89-0.98)	7.3 (4.8-9.9)
Interobserver	0.92 (0.78-1.05)	0.08 (-0.20-0.36)	0.93 (0.86-0.97)	9.0 (6.1-11.8)

Numbers in parentheses are 95% confidence intervals. CAP, controlled attenuation parameter; MRI-PDFF, magnetic resonance imaging-based proton density fat fraction; CV, coefficient of variation; ICC, intraclass correlation coefficient.

Supplementary Table 3. Diagnostic accuracy of steatosis with MRI-PDFF and CAP.

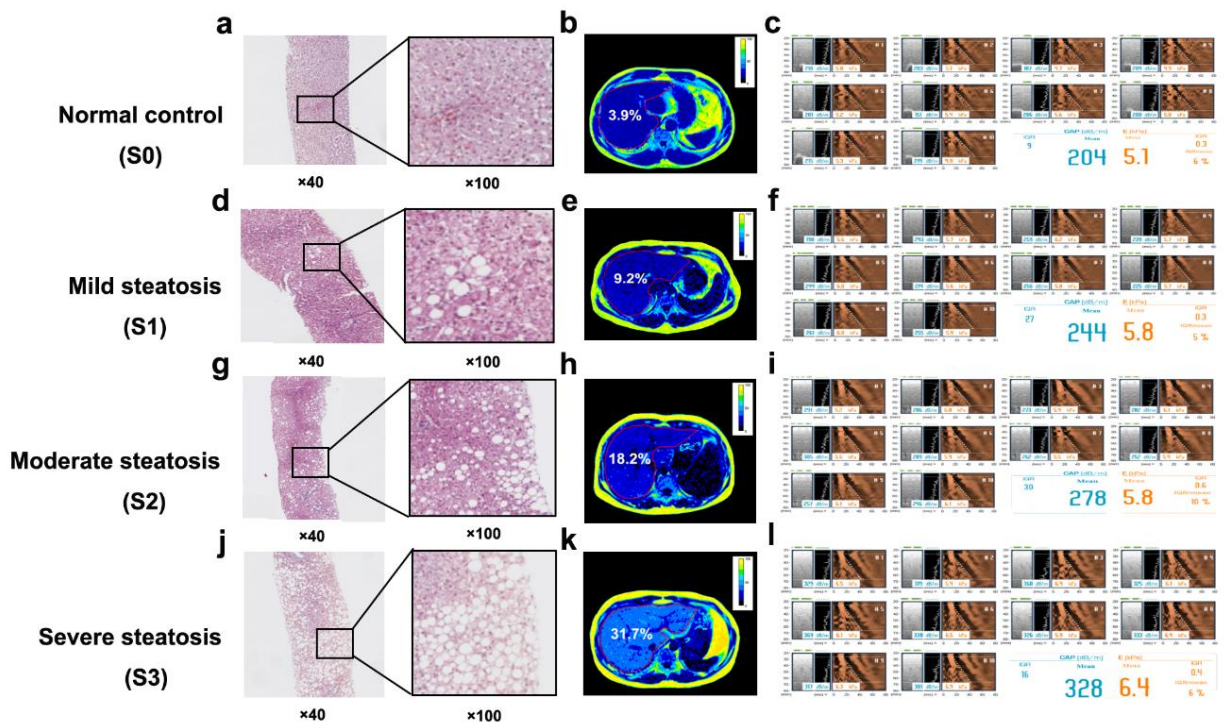| Groups	AUC (95% CI)	P	Cutoff	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Diagnostic accuracy at baseline using histology as standard							
S0 vs S1-S3							
MRI-PDFF	0.984 (0.915-0.999)	<0.001	5.5%	95	100	100.0 (95.5-100.0)	71.4 (41.9-91.6)
CAP	0.972 (0.907-0.998)	<0.001	244 dB/m	92	100	100 (93.8-100.0)	66.7 (38.4-88.2)
S0-S1 vs S2-S3							
MRI-PDFF	0.956 (0.883-0.992)	<0.001	14.6%	90	89	89.8 (77.8-96.6)	88.9 (75.9-96.3)
CAP	0.820 (0.710-0.901)	<0.001	265 dB/m	88	69	71.4 (55.4-84.3)	87.1 (70.2-96.4)
S0-S2 vs S3							
MRI-PDFF	0.966 (0.893-0.995)	<0.001	24.3%	100	87	56.5 (34.5-76.8)	100.0 (94.9-100.0)
CAP	0.815 (0.706-0.898)	<0.001	292 dB/m	99	61	26.5 (12.9-44.4)	100.0 (91.0-100.0)
Diagnostic accuracy at baseline using MRI-PDFF as standard							
S0 vs S1-S3							
CAP	0.925 (0.872-0.960)	<0.001	245 dB/m	75	100	100.0 (96.9-100.0)	29.5 (22.7-42.6)
S0-S1 vs S2-S3							
CAP	0.846 (0.780-0.899)	<0.001	269 dB/m	85	47	80.6 (71.1-88.1)	80.0 (68.2-88.9)
S0-S2 vs S3							
CAP	0.835 (0.768-0.889)	<0.001	291 dB/m	72	95	80.0 (65.4-90.4)	84.7 (77.1-90.5)
Diagnostic accuracy at 6th month using MRI-PDFF as standard							
S0 vs S1-S3							

	AUC (95% CI)	p	Cutoff	Sensitivity	Specificity	PPV (95% CI)	NPV (95% CI)
CAP	0.928 (0.876-0.963)	<0.001	248 dB/m	89	81	95.4 (90.2-98.3)	53.1 (34.7-70.9)
S0-S1 vs S2-S3							
CAP	0.857 (0.793-0.908)	<0.001	270 dB/m	78	82	68.9 (55.7-80.1)	87.6 (79.4-93.4)
S0-S2 vs S3							
CAP	0.842 (0.776-0.895)	<0.001	289 dB/m	75	92	56.4 (39.6-72.2)	94.1 (88.3-97.6)
Diagnostic value at follow-up using MRI-PDFF as standard							
MRI-PDFF changes ≥5% predicted by CAP changes	0.685 (0.606-0.757)	<0.001	16 dB/m	80	49	47.4 (37.2-57.8)	81.7 (69.6-90.5)
MRI-PDFF changes ≥10% predicted by CAP changes	0.704 (0.626-0.773)	0.001	33 dB/m	57	84	45.9 (29.5-63.1)	89.3 (82.3-94.2)
MRI-PDFF steatosis grade improvement predicted by CAP changes	0.717 (0.638-0.788)	<0.001	-15 dB/m	69	66	59.0 (47.7-69.7)	77.9 (66.2-87.1)
MRI-PDFF steatosis stage worsening predicted by CAP changes	0.685 (0.599-0.792)	0.003	16 dB/m	56	81	23.8 (8.2-47.2)	94.5 (86.6-98.5)

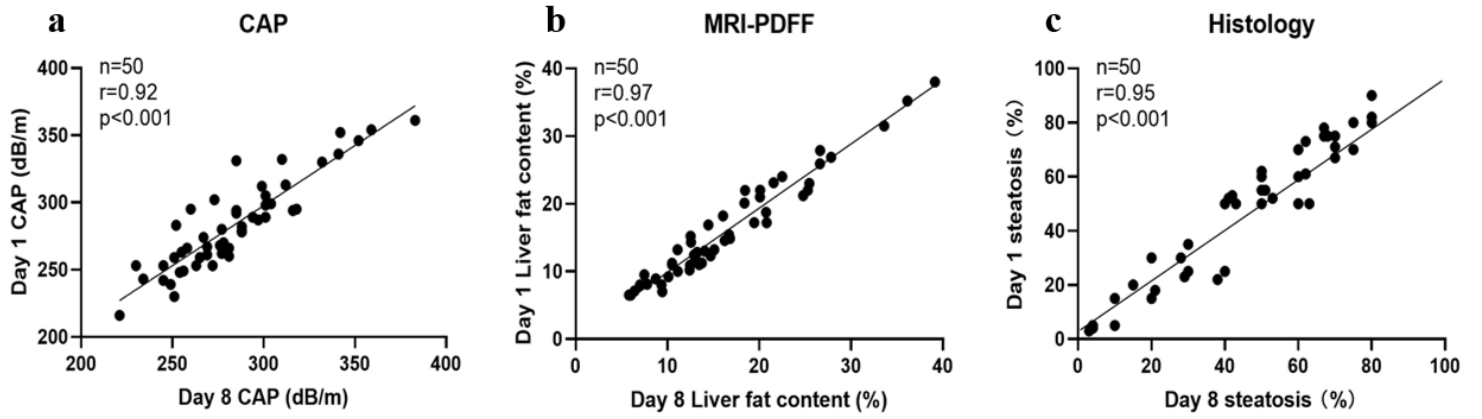MRI-PDFF, magnetic resonance imaging-based proton density fat fraction; CAP, controlled attenuation parameter

Supplementary Table 4. Grade changes defined by CAP and the corresponding changes of CAP and MRI-PDFF.

Steatosis grade defined by CAP							
At baseline	At 6th month	Grade change	N=158	$\triangle$CAP>16 dB/m	$\triangle$CAP>33 dB/m	$\triangle$MRI-PDFF>5%	$\triangle$MRI-PDFF>10%
3	0	-3	3 (1.9%)	3(1.9%)	3(1.9%)	2(1.3%)	2(1.3%)
3	1	-2	4(2.5%)	4(2.5%)	4(2.5%)	4(2.5%)	3(1.9%)
2	0	-2	7(4.4%)	7(4.4%)	5(3.2%)	4(2.5%)	2(1.3%)
3	2	-1	18(11.4%)	17(10.8%)	11(7.0%)	14(8.9%)	11(7.0%)
2	1	-1	38(24.1%)	25(15.8%)	6(3.8%)	18(11.4%)	6(3.8%)
1	0	-1	8(5.1%)	6(3.8%)	0(0%)	0(0%)	0(0%)
3	3	0	13(8.2%)	9(5.7%)	2(1.3%)	8(5.0%)	2(1.3%)
2	2	0	30(19.0)	7(4.4%)	0(0%)	7(4.4%)	2(1.3%)
1	1	0	13(8.2%)	0 (0%)	0(0%)	1(0.6%)	0(0%)
0	0	0	2(1.3%)	0(0%)	0(0%)	1(0.6%)	0(0%)
2	3	1	11(7.0%)	11(7.0%)	6(3.8%)	2(1.3%)	0(0%)
1	2	1	7(4.4%)	4(2.5%)	0(0%)	1(0.6%)	1(0.6%)
0	1	1	3(1.9%)	3(1.9%)	0(0%)	0(0%)	0(0%)
0	2	2	1(0.6%)	1(0.6%)	1(0.6%)	1(0.6%)	1(0.6%)

Supplementary Figure 1.

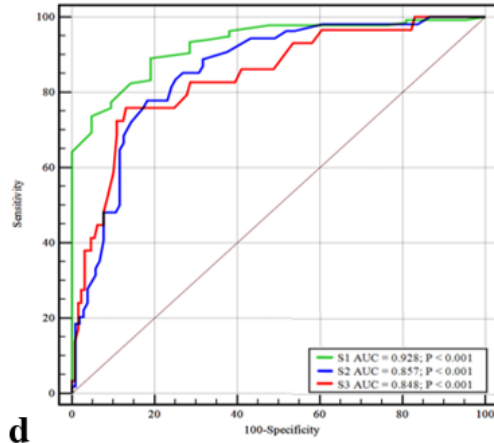|			
a	**b** 3.9%	**c**	
Normal control (S0) ×40 ×100		9 **204** **5.1** 6 %	
d	**e** 9.2%	**f**	
Mild steatosis (S1) ×40 ×100		27 **244** **5.8** 5 %	
g	**h** 18.2%	**i**	
Moderate steatosis (S2) ×40 ×100		30 **278** **5.8** 10 %	
j	**k** 31.7%	**l**	
Severe steatosis (S3) ×40 ×100		16 **328** **6.4** 6 %	

Supplementary Figure 2.

Supplementary Figure 3.

a

CAP for steatosis graded by MRI-PDFF at baseline

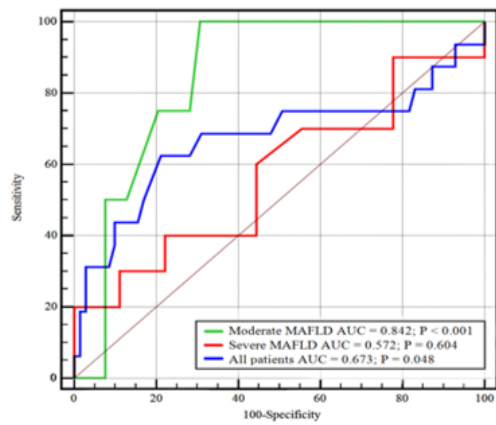b

CAP for steatosis graded by MRI-PDFF at 6th month

c

△CAP for △MRI-PDFF ≥5% remaining in the same steatosis grade

d

△CAP for △MRI-PDFF ≥10% remaining in the same steatosis grade