

Table SI. Combination of ALBI and INR as prognostic indices.

Variable	Score
INR	
≤1.205	0
>1.205	1
ALBI	
≤-2.60	1
-2.61-1.39	2
>-1.39	3
IALBI grade	
1-2	1
3	2
4	3

INR international normalized ratio, IALBI, INR-albumin-bilirubin score.

Table SII. INR, ALBI and IALBI for predicting rebleeding.

A, 1 month			
Variable	AUC (95% CI)	Z-score	P-value
INR	0.634 (0.569-0.698)	0.880	0.379 ^a
ALBI	0.687 (0.611-0.762)	1.970	0.049 ^b
IALBI	0.739 (0.687-0.792)	2.982	0.003 ^c
B, 3 months			
Variable	AUC (95% CI)	Z-score	P-value
INR	0.623 (0.566-0.680)	0.716	0.474 ^a
ALBI	0.654 (0.597-0.712)	1.757	0.079 ^b
IALBI	0.697 (0.638-0.755)	2.923	0.003 ^c
C, 12 months			
Variable	AUC (95% CI)	Z-score	P-value
INR	0.604 (0.560-0.649)	1.138	0.255 ^a
ALBI	0.573 (0.530-0.615)	2.577	0.010 ^b
IALBI	0.620 (0.572-0.668)	0.997	0.319 ^c

^aINR vs. ALBI, ^bALBI vs. IALBI, ^cINR vs. IALBI. INR, international normalized ratio, IALBI, INR-albumin-bilirubin score; AUC, area under the curve.

Table SIII. IALBI, CTP and MELD for predicting rebleeding.

A, 1 month			
Variable	AUC (95% CI)	Z-score	P-value
CTP	0.666 (0.575-0.757)	0.182	0.856 ^a
MELD	0.655 (0.543-0.766)	1.596	0.111 ^b
IALBI	0.739 (0.687-0.792)	1.653	0.098 ^c
B, 3 months			
Variable	AUC (95% CI)	Z-score	P-value
CTP	0.613 (0.532-0.693)	1.113	0.266 ^a
MELD	0.668 (0.582-0.753)	0.709	0.478 ^b
IALBI	0.697 (0.638-0.755)	2.211	0.027 ^c
C, 12 months			
Variable	AUC (95% CI)	Z-score	P-value
CTP	0.547 (0.496-0.599)	1.319	0.187 ^a
MELD	0.593 (0.536-0.650)	1.004	0.315 ^b
IALBI	0.620 (0.572-0.668)	2.663	0.008 ^c

^aCTP vs. MELD, ^bMELD vs. IALBI, ^cCTP vs. IALBI. IALBI, international normalized ratio-albumin-bilirubin score; CTP, Child-Turcotte-Pugh; MELD, model for end-stage liver disease; AUC, area under the curve.

Table SIV. Characteristics of patients with viral and non-viral cirrhosis.

Variable	Viral		P-value	Non-viral		P-value
	Non-rebleeding (n=140)	Rebleeding (n=59)		Non-rebleeding (n=144)	Rebleeding (n=94)	
Sex			0.239			0.222
Female	50 (35.71)	16 (27.12)		76 (52.78)	42 (44.68)	
Male	90 (64.29)	43 (72.88)		68 (47.22)	52 (55.32)	
Age, years	57.54±10.24	55.31±11.32	0.176	57.23±10.49	57.88±11.69	0.654
PT, sec	14.98±1.35	16.01±2.30	0.002	16.53±2.27	17.68±3.07	0.002
INR	1.19±0.15	1.28±0.21	0.004	1.36±0.25	1.47±0.32	0.005
Fibrinogen, g/l	2.28 (1.87,2.74)	2.05 (1.61,2.51)	0.053	1.90 (1.52,2.42)	2.12 (1.64,2.63)	0.038
WBC count, x10 ⁹ /l	3.61 (2.35,4.88)	4.00 (2.93,5.51)	0.074	4.16 (2.87,5.97)	3.53 (2.34,5.58)	0.116
NEUT count	68.56±10.11	68.74±9.89	0.911	69.96±11.39	72.07±10.57	0.152
HGB, g/l	97.46±26.80	90.25±23.27	0.074	91.30±25.62	95.31±26.16	0.243
PLT count, x10 ⁹ /l	72.00 (50.25,96.00)	76.00 (58.00,97.00)	0.339	70.00 (52.00,90.75)	72.50 (49.75,102.00)	0.452
ALB, g/l	39.39±3.67	38.36±3.05	0.059	30.66±3.79	29.99±4.07	0.195
ALT, U/l	22.00 (16.00,31.00)	23.00 (16.00,35.00)	0.350	27.00 (16.00,36.75)	26.00 (15.00,42.00)	0.848
AST, U/l	26.00 (20.00,34.75)	29.00 (19.00,43.00)	0.416	33.00 (21.25,51.00)	37.00 (22.75,50.75)	0.489
TBIL, µmol/l	16.40 (12.28,22.08)	16.80 (11.20,25.40)	0.350	26.65 (18.03,38.05)	23.75 (16.00,38.38)	0.501
BUN, mmol/l	5.17 (3.85,6.90)	5.87 (4.53,8.06)	0.088	6.29 (4.55,9.17)	5.97 (4.27,8.26)	0.551
Cr, µmol/l	62.00 (54.00,76.00)	66.00 (52.00,75.00)	0.863	64.00 (54.50,75.00)	64.50 (55.00,80.25)	0.360
Na, mmol/l	139.71±3.33	138.60±3.26	0.032	139.16±4.36	138.88±3.70	0.610
GLU, mmol/l	7.20±3.14	7.12±3.47	0.866	7.57±3.94	7.58±4.10	0.988
HBV-DNA/HCV-RNA			<0.001			-
Negative	90 (64.29)	21 (35.59)		-	-	
Positive	50 (35.71)	38 (64.41)		-	-	
Spleen diameter, cm	15.51±2.49	15.32±2.58	0.624	15.20±2.49	14.99±2.20	0.506
Portal vein diameter, mm	14.10±1.86	14.03±1.71	0.823	13.93±1.54	14.06±1.85	0.572
PVT			0.480			0.242
No	105 (75.00)	47 (79.66)		107 (74.31)	76 (80.85)	
Yes	35 (25.00)	12 (20.34)		37 (25.69)	18 (19.15)	
CT portosystemic shunt			0.564			0.390
No	127 (90.71)	55 (93.22)		128 (88.89)	80 (85.11)	
Yes	13 (9.29)	4 (6.78)		16 (11.11)	14 (14.89)	
CTP grade			0.033			0.972
A	112 (80.00)	39 (66.10)		46 (31.94)	35 (37.23)	
B	28 (20.00)	19 (32.20)		83 (57.64)	43 (45.75)	
C	0 (0.00)	1 (1.70)		15 (10.42)	16 (17.02)	
MELD	5.14 (2.10,7.52)	7.03 (3.66,8.48)	0.095	8.28 (5.40,10.93)	8.99 (6.37,12.23)	0.052
ALBI grade			0.013			0.498
1	54 (38.57)	12 (20.34)		0 (0.00)	0 (0.00)	
2	86 (61.43)	47 (79.66)		112 (77.78)	68 (72.34)	
3	0 (0.00)	0 (0.00)		32 (22.22)	26 (27.66)	
mALBI grade			0.004			0.301
1	54 (38.57)	12 (20.34)		0 (0.00)	0 (0.00)	
2a	65 (46.43)	30 (50.85)		1 (0.69)	0 (0.00)	
2b	21 (15.00)	17 (28.81)		111 (77.09)	68 (72.34)	

3	0 (0.00)	0 (0.00)		32 (22.22)	26 (27.66)	
PALBI grade			0.029			0.478
1	89 (63.57)	28 (47.46)		7 (4.86)	5 (5.32)	
2	51 (36.43)	30 (50.85)		55 (38.19)	40 (42.55)	
3	0 (0.00)	1 (1.69)		82 (56.95)	49 (52.13)	
IALBI grade			<0.001			0.020
1	100 (71.43)	26 (44.07)		29 (20.14)	10 (10.64)	
2	40 (28.57)	33 (55.93)		95 (65.97)	63 (67.02)	
3	0 (0.00)	0 (0.00)		20 (13.89)	21 (22.34)	
ALBI-FIB4			0.698			0.882
Low risk	118 (84.29)	51 (86.44)		31 (21.53)	21 (22.34)	
High risk	22 (15.71)	8 (13.56)		113 (78.47)	73 (77.66)	
FIB-4	4.63 (3.05,6.71)	4.06 (2.62,6.56)	0.375	5.78 (3.68,9.27)	6.10 (3.09,9.22)	0.802

Values are expressed as the mean $\pm$ standard deviation, median (interquartile range), n or n (%). HBV, hepatitis B virus; HCV, hepatitis C virus; PT, prothrombin time; INR, international normalized ratio; WBC, white blood cell; NEUT, neutrophil; HGB, hemoglobin; PLT, platelet; ALB, albumin; ALT, alanine aminotransferase; AST, aspartate aminotransferase; TBIL, total bilirubin; BUN, blood urea nitrogen; Cr, creatinine; GLU, blood glucose; PVT, portal vein thrombosis; GOV, gastroesophageal varices; IGV, isolated gastric varices type 1; CTP, Child-Turcotte-Pugh; MELD, model for end-stage liver disease; mALBI, modified albumin-bilirubin; PALBI, platelet-ALBI; FIB-4, fibrosis-4.

Table SV. Summary of cumulative rebleeding rates across different ALBI related scoring systems.

ALBI score	n (%)	Cumulative rebleeding rate, %			Log-rank χ^2	P-value
		1 month	3 months	12 months		
mALBI grade					16.095	0.001
1	66 (15.1)	0.0	0.0	18.2		
2a	96 (22.0)	3.1	8.3	31.2		
2b	217 (49.7)	3.7	12.4	39.3		
3	58 (13.3)	15.5	25.9	44.8		
PALBI grade					8.323	0.016
1	129 (29.5)	3.9	6.2	25.6		
2	176 (40.3)	5.1	10.8	39.8		
3	132 (30.2)	6.8	17.4	38.0		
IALBI grade					27.370	<0.001
1	165 (37.8)	0.0	2.4	21.8		
2	231 (52.9)	10.0	15.2	41.7		
3	41 (9.4)	19.5	26.8	51.2		
ALBI-FIB4					1.910	0.167
Low risk	221 (50.6)	4.5	10.0	32.6		
High risk	216 (49.4)	9.7	13.0	37.6		

mALBI, modified albumin-bilirubin; PALBI, platelet-ALBI; FIB-4, fibrosis-4; IALBI, international normalized ratio-ALBI.

Table SVI. Baseline characteristics of the training and the validation cohort.

Variable	Training cohort (n=437)	Validation cohort (n=159)	t/Z/ χ^2 -score	P-value
Sex			$\chi^2=3.745$	0.053
Female	184 (42.11)	53 (33.33)		
Male	253 (57.89)	106(66.67)		
Age, years	57.21±10.79	60.55±9.01	t=8.087	0.001
Etiology			$\chi^2=36.881$	<0.001
HBV	169 (38.67)	99 (62.26)		
HCV	30 (6.87)	18 (11.32)		
Alcohol	85 (19.45)	16 (10.07)		
Other	153 (35.01)	26 (16.35)		
Number of endoscopic treatments	2 (1,4)	1 (1,3)	Z=-4.150	<0.001
Use of NSBB drugs	249 (56.98)	101 (63.52)	$\chi^2=2.059$	0.151
Rebleeding				
1 month	31 (7.09)	17 (10.69)	$\chi^2=2.038$	0.153
3 months	50 (11.44)	33 (20.75)	$\chi^2=8.436$	0.004
12 months	153 (35.01)	63 (39.62)	$\chi^2=1.073$	0.300
INR	1.32±0.26	1.31±0.25	t=0.349	0.727
WBC count, x10 ⁹ /l	3.88 (2.56,5.53)	4.89 (3.53,7.51)	Z=-5.302	<0.001
HGB, g/l	93.99±25.90	89.84±23.07	t=1.783	0.075
PLT count, x10 ⁹ /l	72.00 (51.00,96.50)	85.00 (60.00,135.00)	Z=-3.551	<0.001
ALB, g/l	34.35±5.72	30.89±5.60	t=6.444	<0.001
ALT, U/l	25.00 (16.00,34.00)	31.00 (22.00,58.00)	Z=-5.463	<0.001
AST, U/l	30.00 (21.00,44.00)	49.00 (31.00,104.00)	Z=-7.427	<0.001
TBIL, μ mol/l	20.40 (14.45,31.00)	22.80 (16.00,37.90)	Z=-2.773	0.006
BUN, mmol/l	5.69 (4.24,8.08)	7.15 (4.96,11.02)	Z=-4.768	<0.001
Cr, μ mol/l	64.00 (54.00,76.00)	69.00 (58.00,82.00)	Z=-7.843	0.004
PVT			$\chi^2=4.178$	0.243
None	335 (76.66)	110 (69.18)		
Only trunk	57 (13.04)	29 (18.24)		
Only branch	16 (3.66)	9 (5.66)		
Trunk and branches	29 (6.64)	11 (6.92)		
CT portosystemic shunt			$\chi^2=0.059$	0.808
No	390 (89.24)	143 (89.94)		
Yes	47 (10.76)	16 (10.06)		
Form of esophageal varices			0.593	0.898
F0	25	9		
F1	24	10		
F2	97	31		
F3	291	109		
Gastric varices			0.912	0.822
GOV-1	182	67		
GOV-2	124	41		
GOV-1 and GOV-2	31	11		
IGV1	25	6		
IALBI grade			$\chi^2=5.685$	0.058
1	165 (37.76)	45 (28.30)		
2	231 (52.86)	92 (57.86)		
3	41 (9.38)	22 (13.84)		

Values are expressed as the mean $\pm$ standard deviation, median (interquartile range), n or n (%). HBV, hepatitis B virus; HCV, hepatitis C virus; NSBB, non-selective β -blocker; WBC, white blood cell; HGB, hemoglobin; PLT, platelet; ALB, albumin; ALT, alanine aminotransferase; AST, aspartate aminotransferase; TBIL, total bilirubin; BUN, blood urea nitrogen; Cr, creatinine; GLU, blood glucose; PVT, portal vein thrombosis; GOV, gastroesophageal varices; IGV, isolated gastric varices type 1; INR, international normalized ratio; IALBI, INR-albumin-bilirubin.