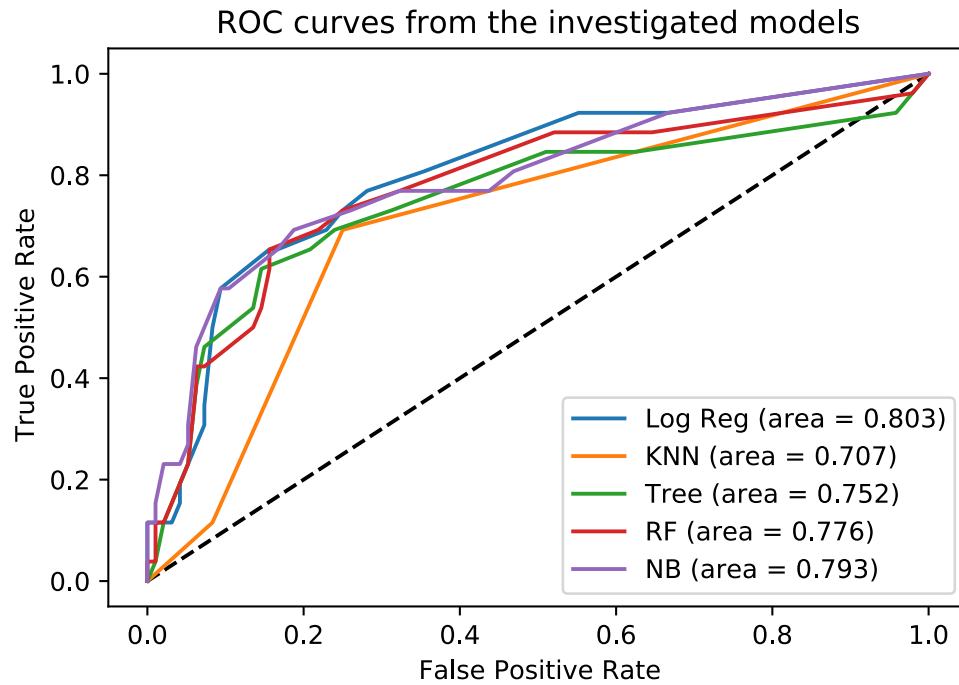**Supplementary material**

Supplementary Figure 1 Area under the curve values for five distinct machine learning models.

Supplementary Table 1 Baseline characteristics of patients included in the study

	All enrolled patients
Gender, male, n (%)	324(79.8)
Age (years)	58[53.0,65.0]
Height (cm)	170[165.0,173.0]
Weight (kg)	69[61.0,78.0]
Alcohol, n (%)	166(40.9)
Ascites, n (%)	26(6.4)
Cirrhosis, n (%)	290(71.4)
HBV, n (%)	291(71.7)
HBG (g/L)	144[132.0,154.0]
PLT	166.5[114.0,218.0]
PT (seconds)	12[11.4,12.8]
ALT (U/L)	28[11.4,42.0]
AST (U/L)	27[20.9,41.0]
Albumin (g/L)	42.65[38.8,45.5]
TBIL (umol/L)	13.95[10.7,18.4]
DBIL (umol/L)	5.1[3.5,7.3]
IBIL (umol/L)	8.47[6.6,11.3]
AFP (ng/ml)	19.07[4.41,427.5]
CEA (ng/ml)	2.58[1.79,3.9]
Number of lesions, n (%)	
1	344(84.7)
>1	62(15.3)
Size of main tumor, n (%)	
$<$ 5 cm	220(54.2)
5cm$\leq$	186(45.8)

Tumor thrombus, n (%)	
NO	344(84.7)
YES	62(15.3)
Pathological type, n (%)	
HCC	340(83.7)
CCA	53(13.1)
HCC-CCA	5(1.2)
Other	8(2.0)
TNM, n (%)	
I	265(65.3)
II	61(15.0)
III	68(16.7)
IV	12(3.0)
ECOG	
0	344(84.7)
1	61(15.0)
2	1(0.2)
Child-Pugh grade, n (%)	
A	378(93.1)
B	28(6.9)
ALBI Score	2.9[-3.1，-2.5]
ALBI grade, n (%)	
1	288(71.0)
2	116(28.6)
3	2(0.4)
Outcomes, n (%)	65(16.0)

Abbreviations: HBV, hepatitis B virus; HBG, hemoglobin; PT, prothrombin time; AST, aspartate aminotransferase; ALT, alanine aminotransferase; TBIL,

total bilirubin; DBIL, direct bilirubin; IBIL, unconjugated bilirubin; AFP, alpha-fetoprotein; CEA, carcinoembryonic antigen; HCC, hepatocellular carcinoma; CAA, cholangio carcinoma; HCC-CCA, combined hepatocellular-cholangiocarcinoma; ALBI, albumin-bilirubin