

**Supplementary Table 1. Baseline characteristics for participants**

Hepatic function index (unit) (n)	HCC Patients after TACE		Hepatic function index (unit) (n)	HCC Patients after TACE	
	n <sub>0</sub>	%		n <sub>0</sub>	%
AFP (ng/mL)(106)			TBIL (umol/L) (106)		
Range	0.23-2000		Range	7.3-34.1	
Median	60.7		Median	22.1	
<60.7	53	50	<22.1	53	50
≥60.7	53	50	≥22.1	53	50
ALT (U/L)(106)			DBIL(umol/L) (106)		
Range	10.7-523.1		Range	1.9-259.4	
Median	46.9		Median	7.7	
<46.9	52	49.1	<7.7	53	50
≥46.9	54	50.9	≥7.7	53	50
AST (U/L) (106)			IBIL(umol/L) (106)		
Range	13.8-1293.8		Range	2-81.7	
Median	52.8		Median	12.2	
<52.8	53	50	<12.2	51	48.1
≥52.8	53	50	≥12.2	55	51.9
ALT/AST (106)			ALP(U/L) (106)		
Range	0.3-4.2		Range	38.8-548.5	
Median	1.1		Median	116.1	
<1.1	52	49.1	<116.1	52	49.1
≥1.1	54	50.9	≥116.1	54	50.9
TP(g/L) (106)			GGT(U/L) (106)		
Range	30.1-108.5		Range	11.4-992.4	
Median	63.6		Median	79.8	
<63.6	53	50	<79.8	53	50
≥63.6	53	50	≥79.8	53	50
ALB(g/L)(106)			PAB(mg/L) (106)		
Range	17.7-64.4		Range	35-365	
Median	35.4		Median	174.5	
<35.4	52	49.1	<174.5	53	50
≥35.4	54	50.9	≥174.5	53	50
GLB(g/L)(106)			TBA(umol/L) (106)		
Range	12.4-45.2		Range	0.2-115.9	
Median	28.9		Median	11.6	
<28.9	53	50	<11.6	53	50
≥28.9	53	50	≥11.6	53	50
AG(106)			ADA(U/L) (106)		
Range	1.0-2		Range	3-33.5	

Median		1.2	Median		9.9
<1.2	49	46.2	<9.9	53	50
≥1.2	57	53.8	≥9.9	53	50
PT(s) (106)			AFU(U/L) (106)		
Range		12.4-25.0	Range		8.2-90.5
Median		14.4	Median		37.3
<14.4	52	49.1	<37.1	53	50
≥14.4	54	50.9	≥37.1	53	50

Notes: Data are presented as n (%);

Abbreviations: HCC, hepatocellular carcinoma; PVTT, portal vein tumor thrombus; FIT, frequency of interventional treatment; AFP,  $\alpha$ -fetoprotein; ALT, alanine transaminase; AST, aspartate aminotransferase; TP, total protein; ALB, albumin; GLB, globulin; AG, ALB/GLB; GGT, gamma-glutamyl transpeptidase; TBIL, total bilirubin; DBIL, Direct Bilirubin; IBIL, indirect bilirubin; ALP, Alkaline Phosphatase; PAB, prealbumin; TBA, Total Bile Acid; ADA, adenosine deaminase; AFU, fucosidase; PT, prothrombin time; HE, hepatic encephalopathy; TACE, Transhepatic Arterial Chemotherapy And Embolization.

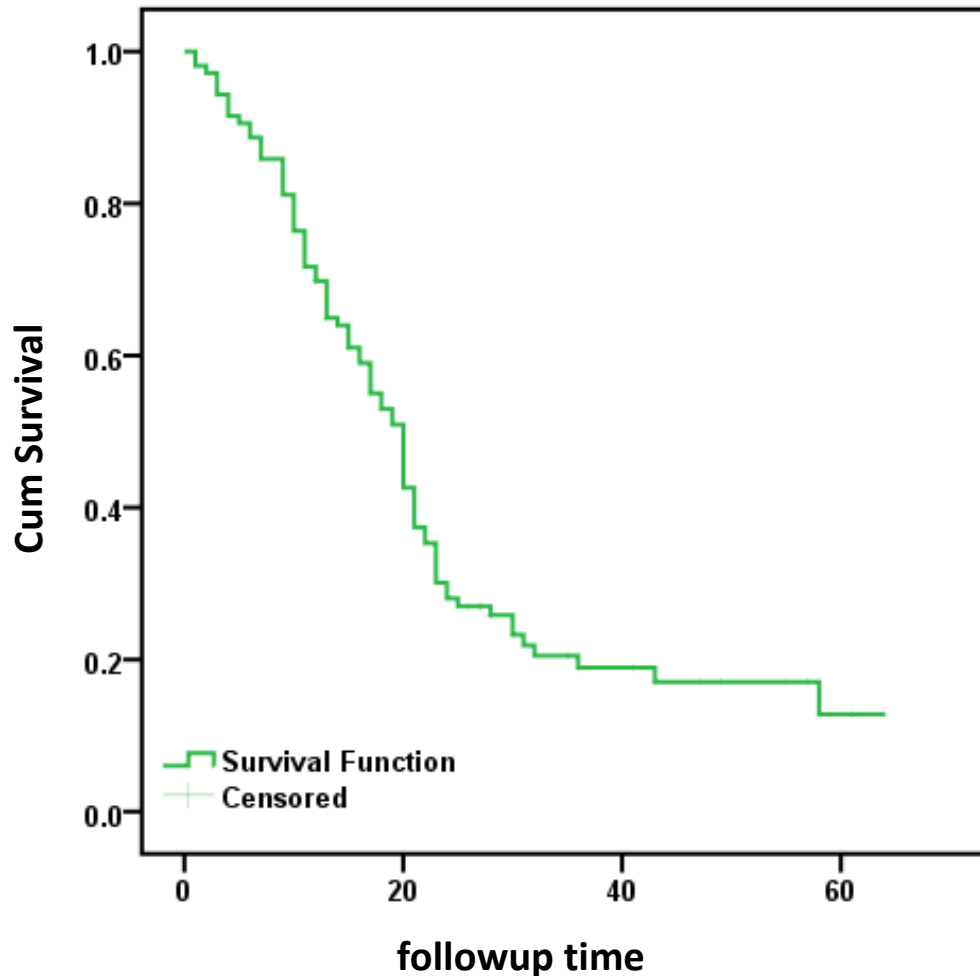
**Supplementary table 2a. Correlation analysis among liver function indexes and Child-pugh grade in HCC patients**

	AFP	ALT	AST	ALT/AST	TP	Alb	GLb	AG	PT	TBIL	DBIL	IBIL	ALP	GGT	PAB	TBA	ADA	AFU	Child-pugh grade	
AFP	1																			
ALT	.351**	1																		
AST	.400**	.792**	1																	
ALT/AST	-0.06	-.522**	0.013	1																
TP	-.193*	-0.113	-0.036	0.056	1															
Alb	-.255**	-.269**	-.212*	0.075	.685**	1														
GLb	-0.043	0.071	0.125	-0.018	.778**	0.131	1													
AG	-0.094	-.200*	-.198*	0.067	-.202*	.520**	-.744**	1												
PT	0.081	0.02	-0.016	-0.106	-0.046	-0.103	0.002	-0.057	1											
TBIL	.341**	.431**	.463**	-0.025	-.304**	-.435**	-0.054	-.235*	0.137	1										
DBIL	.381**	.493**	.501**	-0.095	-.276**	-.440**	0.012	-.294**	0.086	.876**	1									
IBIL	.223*	.250**	.267**	-0.014	-.232*	-.252**	-0.107	-0.088	0.089	.808**	.547**	1								
ALP	.262**	.372**	.413**	-0.099	0.113	-0.085	.252**	-.259**	-0.051	.263**	.395**	0.034	1							
GGT	.360**	.540**	.550**	-0.153	-0.052	-.235*	0.156	-.263**	-0.041	.423**	.535**	0.18	.703**	1						
PAB	-.234*	-0.114	-0.175	-0.081	.314**	.523**	0.007	.306**	-0.186	-.325**	-.325**	-0.188	-0.062	-0.176	1					
TBA	.240*	.241*	.243*	-0.049	-0.087	-.344**	0.188	-.377**	.261**	.518**	.518**	.423**	.200*	.277**	-.263**	1				
ADA	.271**	.425**	.439**	-0.086	0.088	-0.108	.223*	-.253**	.239*	.322**	.376**	0.134	.338**	.314**	-0.139	.239*	1			
AFU	0.095	0.135	0.158	-0.05	-0.044	-0.057	0.016	-0.005	-0.078	0.12	0.14	0.156	.249*	.276**	-0.047	.198*	0.115	1		
Child-pugh grade	.342**	.308**	.234*	-0.151	-.540**	-.583**	-.259**	-0.12	.462**	.523**	.445**	.389**	0.036	.282**	-.332**	.406**	.248*	0.115	1	

**Supplementary table 2b. Correlation analysis between image data and Child-pugh grade in HCC patients**

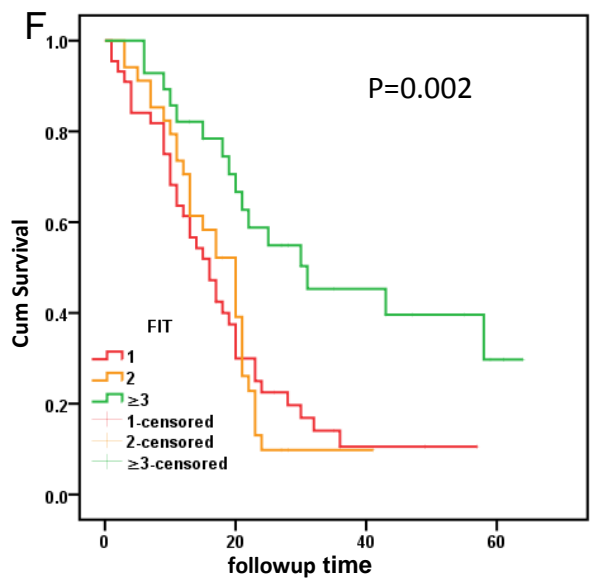
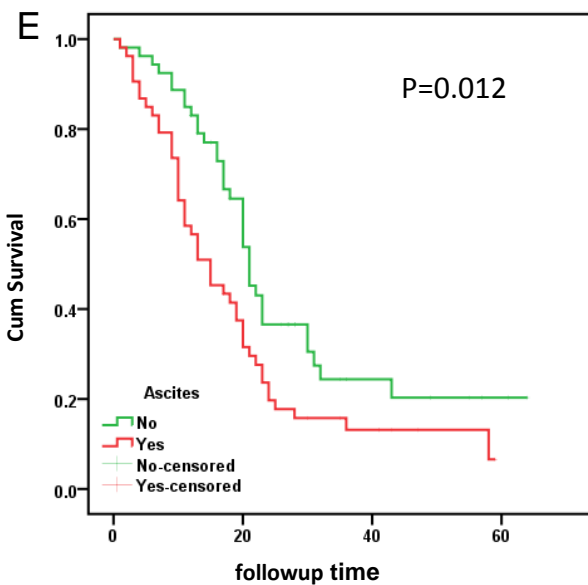
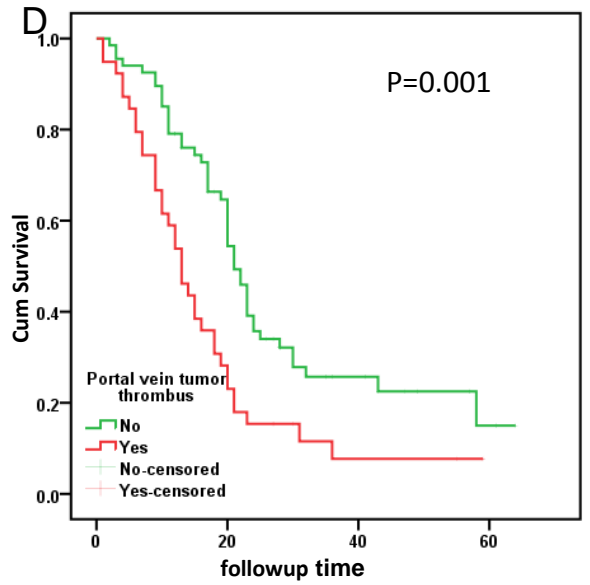
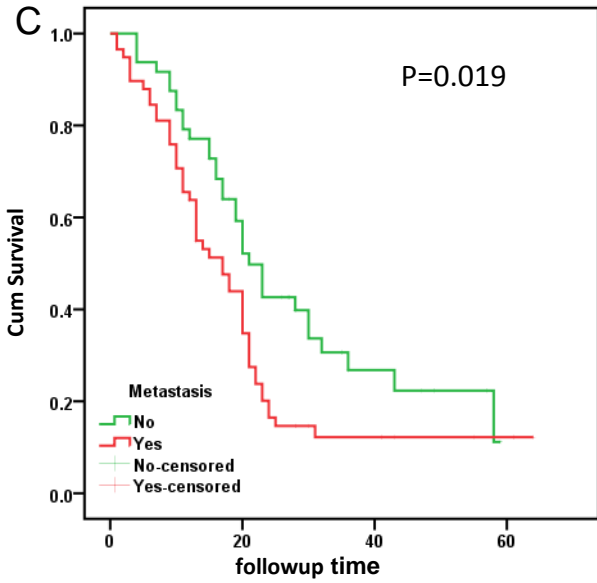
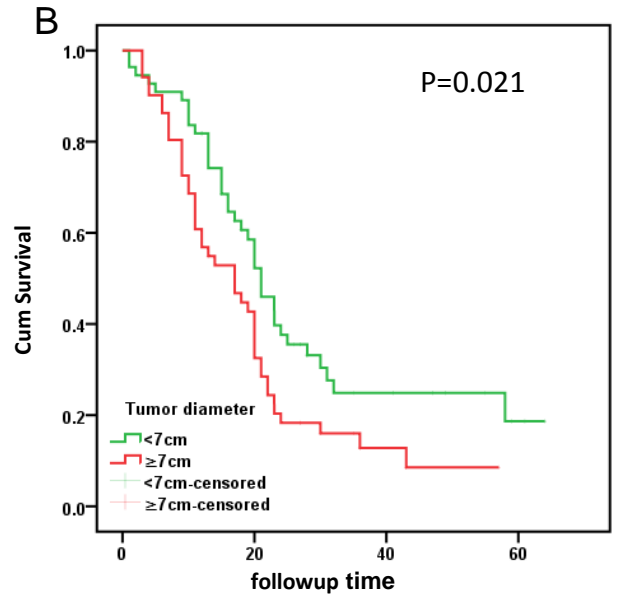
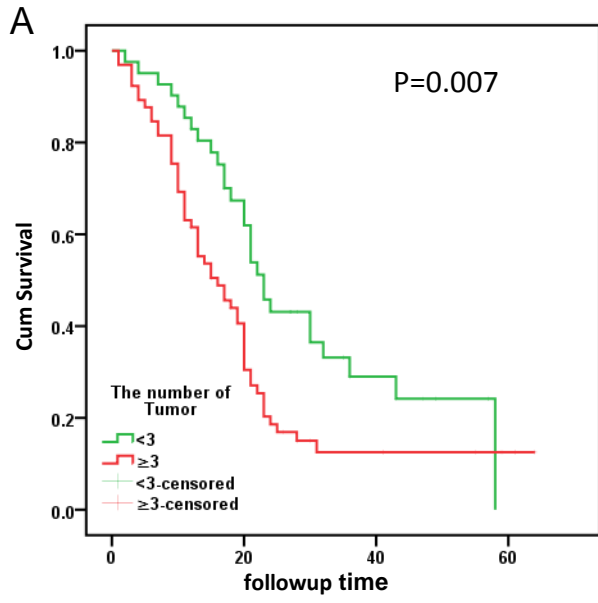
	Sex	Age	Cirrhosis	splenomegaly	Tumor diameter	Tumor number	metastasis	PVTT	ascites	HE	<b>FIT</b>	Child-pugh grade
Sex	1											
Age	0.147	1										
Cirrhosis	-0.185	-.358**	1									
splenomegaly	0.005	-.365**	.621**	1								
Tumor diameter	-0.039	-0.044	-.236*	-0.064	1							
Tumor number	-0.157	0.016	0.183	0.103	-0.041	1						
metastasis	0.109	0.007	0.057	0.144	0.142	.289**	1					
PVTT	-0.137	-.242*	.191*	.349**	.202*	.204*	.222*	1				
ascites	-0.101	-.255**	.214*	.293**	0.101	0.136	0.152	0.176	1			
HE	-0.019	-0.181	0.073	-0.086	-0.007	-0.023	-0.063	0.112	0.19	1		
<b>FIT</b>	0.091	0.058	0.066	0.059	-0.048	0.038	.217*	0.02	0.072	0.042	1	
Child-pugh grade	-0.116	-.339**	.423**	.383**	0.022	0.162	0.084	.218*	.696**	.337**	0.053	1

Note: \*: P<0.05; \*\*P<0.01;

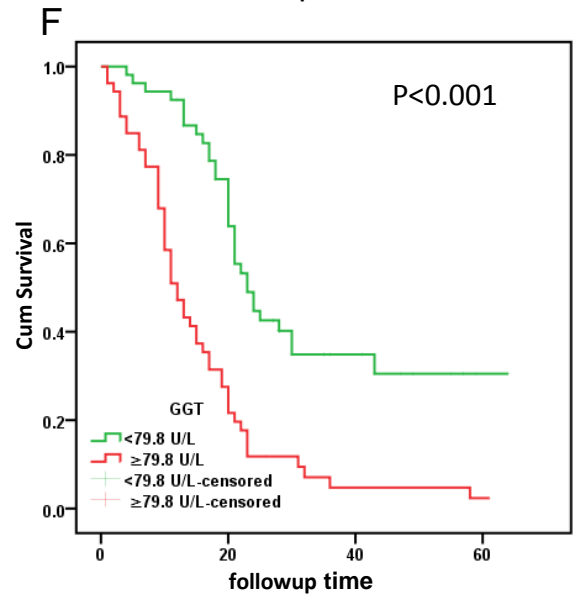
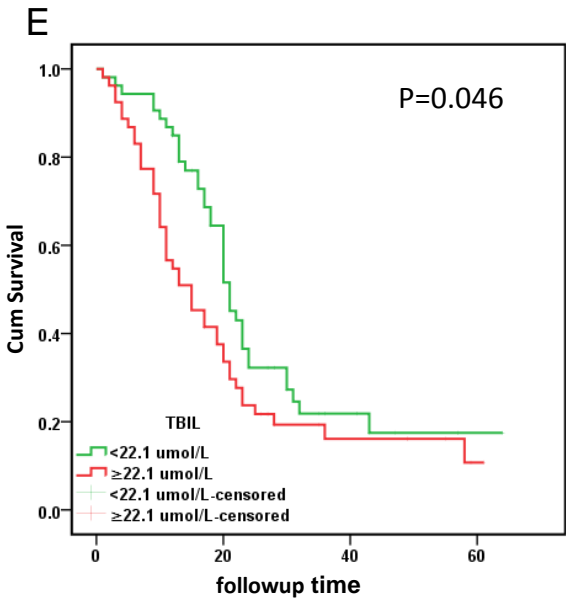
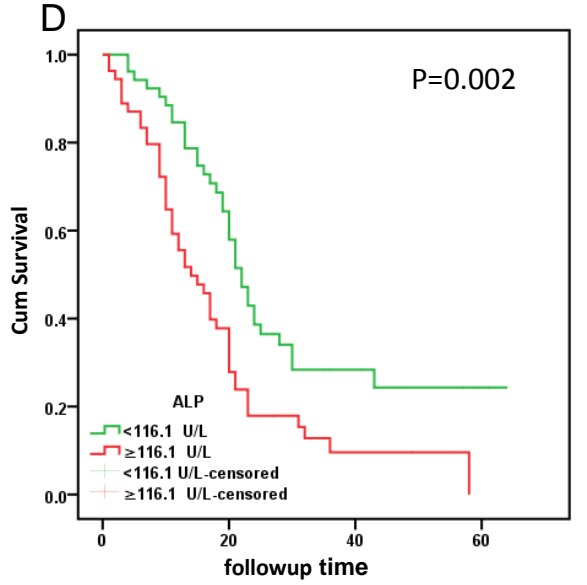
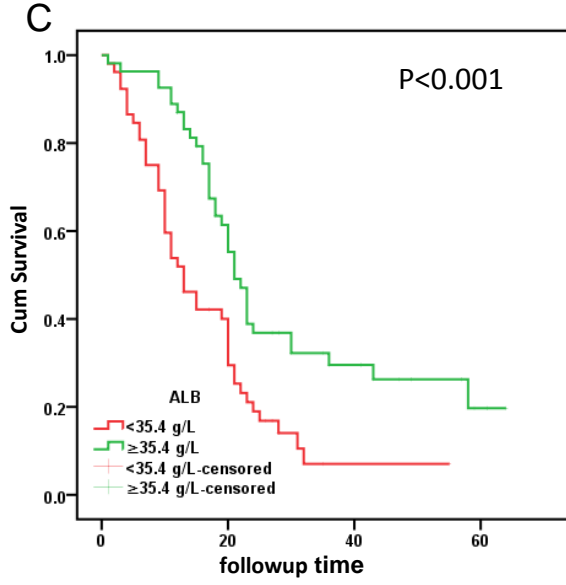
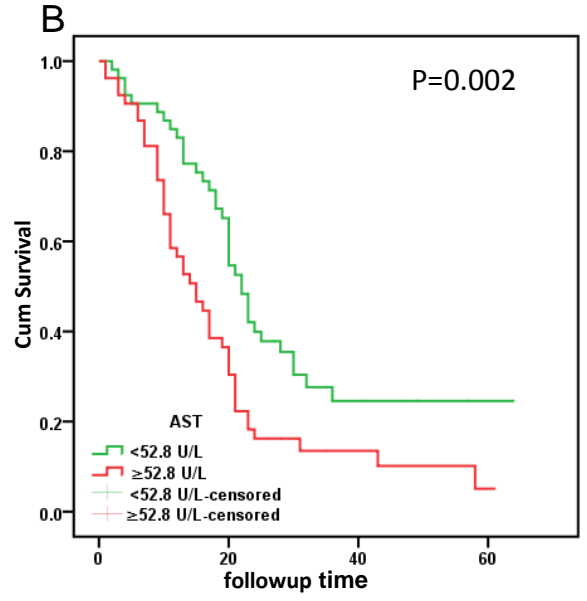
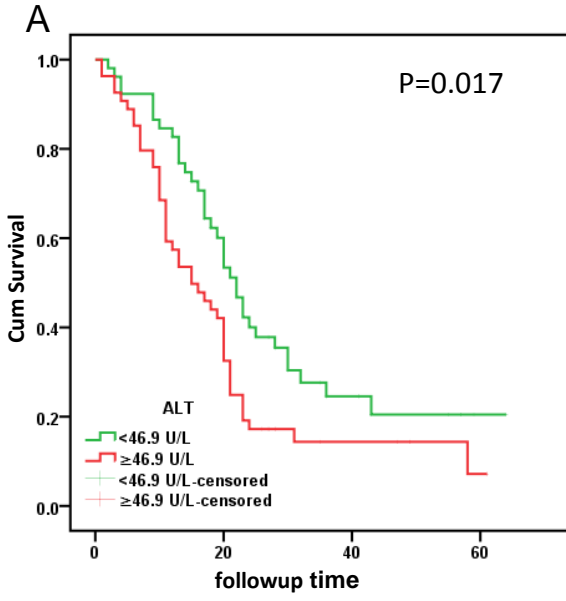


**Supplementary Figure 1** The total survival trend of HCC patients. The longest survival time of patients with HCC after surgery has reached 64 months. On September 1, in 2019, 24 (22.6%) HCC patients were still alive, whereas 82 (77.4%) had died. Follow-up ranged from 0 to 64 months after surgery until September, 2019. 1, 3, 5-year overall survival rate are respectively 69.8%,18.9%, 12.8%.

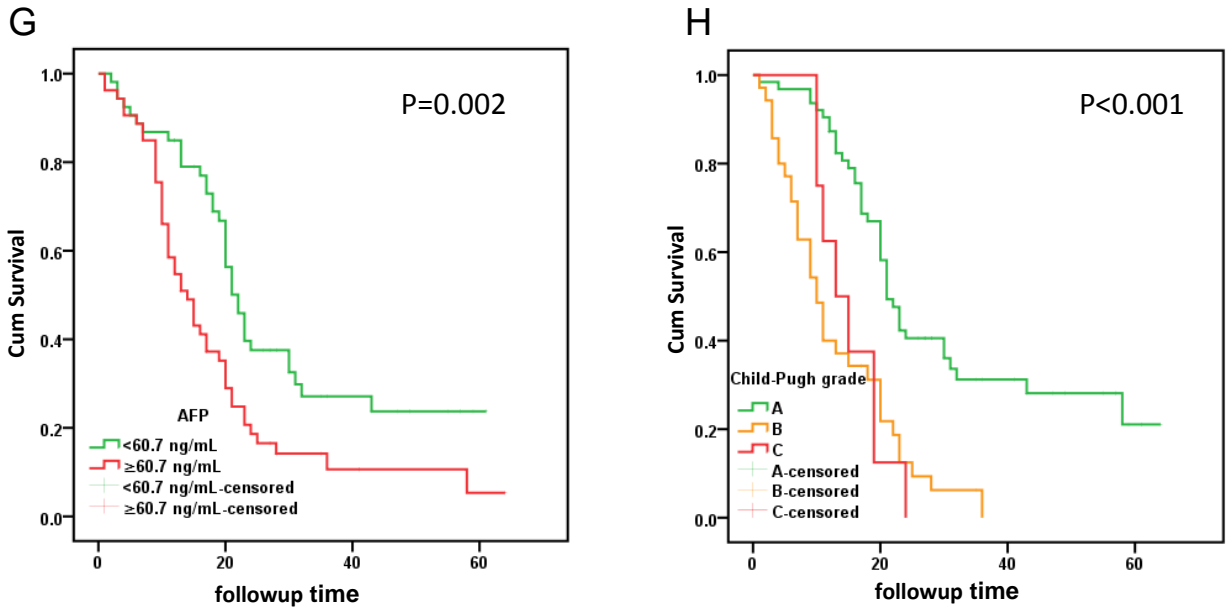
a



b

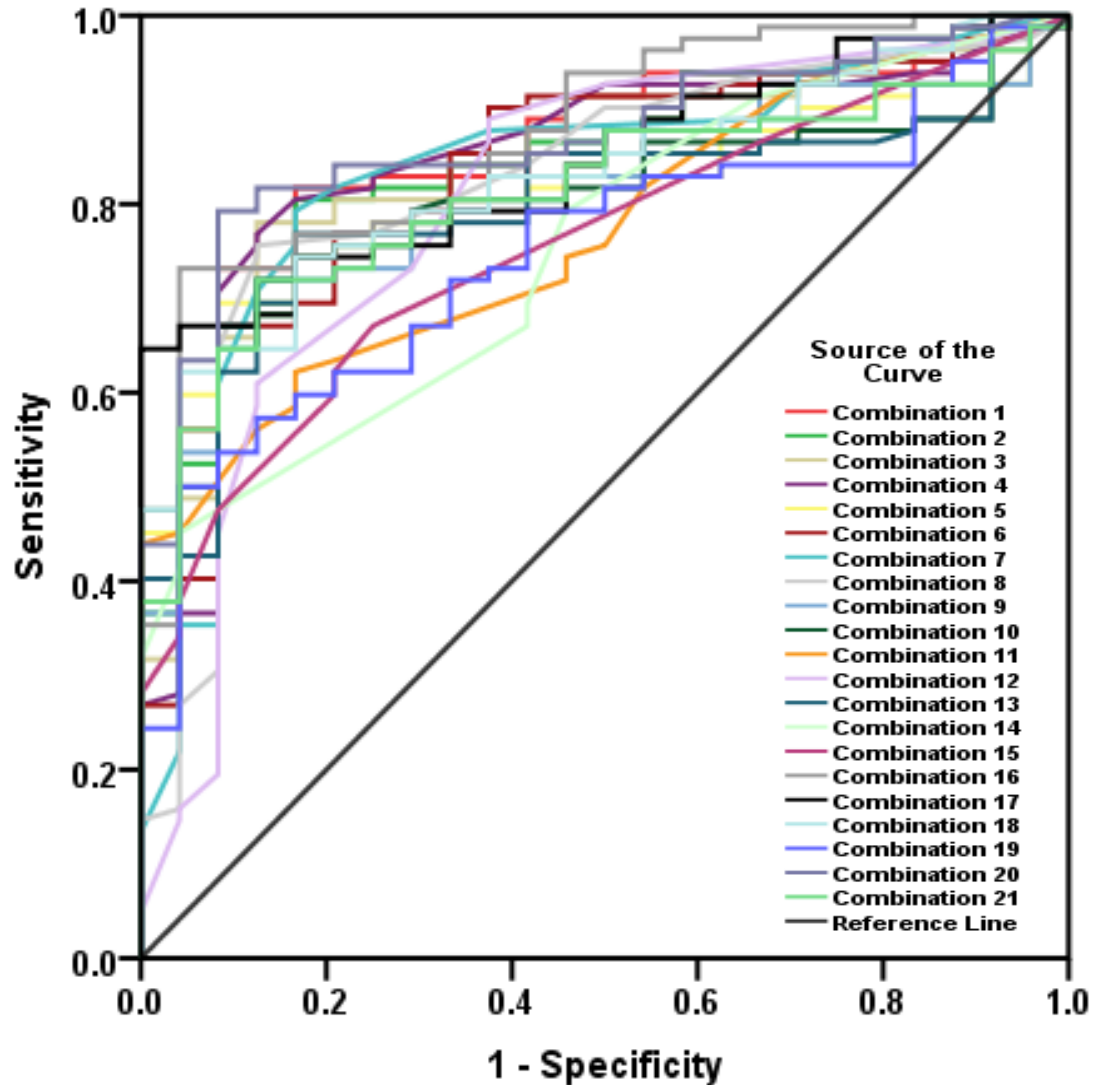


b



**Supplementary Figure 2** Basic information, imaging data, and liver function blood indicators correlate with survival in patients with HCC. Mainly include the following indicators that are meaningful for survival and prognosis: a. Basic information and imaging data: the number of tumors, Tumor diameter, metastasis, PVTT, ascites and FIT; b. liver function blood indicators :ALT, AST, ALB, ALP, TBIL, GGT, AFP and the Child -Pugh grade.





**Supplementary Figure 3** ROC curves reveal performance abilities for 21 combinations affecting patient survival. As shown, the diagonal black line is the reference line and, combination 16 has the largest AUC (AUC = 0.872) followed by combination 20 (AUC = 0.869), combination 1 ( AUC = 0.856), (see Table 4 for statistical comparisons).