

Supplementary Table 1 Univariate analysis in the validation cohort

Variables	Overall survival			Recurrence-free survival		
	HR	95%CI	<i>P</i> value	HR	95%CI	<i>P</i> value
Age (> 60/≤ 60)	0.907	0.660-1.246	0.547	0.780	0.582-1.045	0.096
Gender (F/M)	0.903	0.662-1.232	0.518	0.975	0.734-1.295	0.863
HBsAg	0.921	0.648-1.310	0.649	1.133	0.829-1.547	0.433
Hepatolithiasis	1.061	0.729-1.544	0.758	0.739	0.509-1.071	0.110
CA-199 (≥ 22/< 22)	2.392	1.604-3.569	<0.001	1.816	1.287-2.562	0.001
Tumor size (≥ 5/< 5)	1.323	0.959-1.826	0.088	1.489	1.107-2.002	0.008
Tumor number (multiple/single)	1.806	1.312-2.485	<0.001	1.826	1.362-2.449	<0.001
Tumor differentiation (moderate-poor/well)	3.574	1.136-11.245	0.029	5.083	1.614-16.011	0.005
Macrovascular invasion	1.321	0.914-1.909	0.139	1.196	0.843-1.696	0.316
Microvascular invasion	1.844	1.158-2.934	0.010	1.984	1.284-3.067	0.002
Node positive	2.076	1.483-2.908	<0.001	1.889	1.383-2.581	<0.001
Perineural invasion	1.439	0.955-2.170	0.082	1.127	0.763-1.666	0.547
TNM stage (III/I-II)	1.679	1.160-2.431	0.006	1.856	1.319-2.612	<0.001
NLR (> 2.62/≤ 2.62)	1.800	1.302-2.488	<0.001	1.758	1.311-2.357	<0.001
PLR (> 103/≤ 103)	1.295	0.944-1.776	0.109	1.153	0.864-1.537	0.334
SII (> 450/≤ 450)	1.439	1.053-1.968	0.022	1.410	1.060-1.875	0.018

M: Male; F: Female; CA-199: Carbohydrate antigen-199; TNM: Tumor-node-metastasis; NLR: Neutrophil to lymphocyte ratio; PLR: Platelet to lymphocyte ratio; SII: Systemic immune-inflammation index; HR: Hazard ratio; CI: Confidence interval.

Supplementary Table 2 Multivariate analysis in the validation cohort

Variables	Overall survival			Recurrence-free survival		
	HR	95%CI	<i>P</i> value	HR	95%CI	<i>P</i> value
CA-199 ($\geq 22 / < 22$)	2.434	1.601-3.699	<0.001	1.670	1.170-2.384	0.005
Tumor size				0.935	0.588-1.487	0.776
Tumor number (multiple/single)	1.803	1.267-2.566	0.001	1.447	1.026-2.041	0.035
Tumor differentiation (moderate-poor/well)	1.876	0.575-6.121	0.297	2.871	0.885-9.316	0.079
Microvascular invasion	1.445	0.892-2.341	0.135	1.530	0.971-2.411	0.067
Node positive	1.687	1.142-2.490	0.009	1.454	1.013-2.086	0.042
TNM stage (III/I-II)	0.986	0.473-2.053	0.969	1.360	0.689-2.684	0.375
SII ($> 450 / \leq 450$)	1.438	1.012-2.044	0.043	1.420	1.010-1.996	0.044

M: Male; F: Female; CA-199: Carbohydrate antigen-199; TNM: Tumor-node-metastasis; SII: Systemic immune-inflammation index; HR: Hazard ratio; CI: Confidence interval.