

**Supplementary Table 1.** Multivariable Cox proportional hazards model for patients receiving systemic treatment

<b>Variables</b>	<b>Hazard ratio</b>	<b>95% Confidence interval</b>	<b>P-value</b>
Positive ctDNA	7.69	2.09–28.27	0.002*
Macrovascular invasion	1.84	0.67–5.02	0.234
Extrahepatic spread	0.35	0.09–1.24	0.106
Tumor size $\geq 5$ cm	1.12	0.33–3.83	0.850
AFP $\geq 20$ ng/mL	1.61	0.38–6.77	0.511
Treatment with sorafenib	4.92	1.54–15.67	0.007*
Treatment with immunotherapy	0.20	0.06–0.64	0.007*

\*Statistical significance,  $P < 0.05$ .