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ORIGINAL ARTICLE

Prognostic and Diagnostic Values of Circulating Tumor Cells and Tumor Markers for Lung Cancer

Xiaoqiang Liu [1, #], Chenjie Wang [2, #], Liwen Zhang [2], Haidi Gu [2], Jun Yang [2], Ying Wang [2], Jie Tan [2]

[#] *These authors contributed equally to this work*
[1] *Department of Thoracic Surgery, Nanjing Medical University Suzhou Hospital/Suzhou Cancer Center, Suzhou, Jiangsu, China*
[2] *Department of Internal Medicine of Oncology, Nanjing Medical University Suzhou Hospital/Suzhou Cancer Center, Suzhou, Jiangsu, China*

SUMMARY

Background: **Circulating tumor cells (CTCs) and tumor markers (TMs) are two kinds of diagnostic and prognostic markers for lung cancer. CTCs detect tumor cells, while TMs detect molecules in peripheral blood. This study aimed to investigate which marker is a better choice for the diagnosis and prognostication of lung cancer.**
Methods: **The diagnostic values were compared by generating receiver operating characteristic (ROC) curves and performing logistic regression analyses. The prognostic values were compared by generating Kaplan-Meier curves of CTCs, TMs, and clinical characteristics.**
Results: **The ROC curve analysis showed that CEA had the highest AUC (area under curve) among the TMs, while CTCs had a higher AUC than any of the TMs. Logistic regression analysis indicated that gender, smoking status, CTCs, and CA15-3 were involved in lung cancer prediction. The Kaplan-Meier curves showed that smoking status, pleural invasion, lymph node infiltration, and stage I - II disease were related to poor prognosis. Patients with CTCs or CA125 positivity also had a poor prognosis.**
Conclusions: **Our data indicate that CTCs are a better choice than TMs for the diagnosis and prognostication of lung cancer.**
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Correspondence:
Jie Tan
Department of Internal Medicine of Oncology
Nanjing Medical University Suzhou
Hospital/Suzhou Cancer Center
No. 16 Baita West Road
Gusu District, Suzhou, Jiangsu
China
Email: sllt1202@163.com

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Supplementary Tables and Figures

Table S1. The relationship of TMs and patient characteristic.

Characteristic		CA125	p	AFP	p	CEA	p	CA19-9	p	CA15-3	p	CA72-4	p	CYFRA 21-1	p	NSE	p
Age	< 60	20.49	0.156	3.71	0.035	7.05	0.123	19.18	0.258	12.07	0.199	5.71	0.701	4.40	0.373	15.60	0.986
	≥ 60	41.69		3.02		17.73		39.69		14.79		6.82		6.39		15.57	
Gender	Female	21.41	0.057	3.51	0.478	7.43	0.290	34.52	0.662	11.35	0.052	8.45	0.181	3.82	0.149	13.73	0.051
	Male	40.87		3.20		17.39		26.15		15.43		4.40		6.90		17.22	
Smoking history	Yes	96.49	0.008	2.93	0.395	35.20	0.220	99.42	0.175	22.00	0.014	13.77	0.254	12.96	0.147	20.12	0.028
	No	19.76		3.43		8.56		17.23		11.94		4.91		4.07		14.74	
Diagnosis	Benign lesion	20.16	0.036	3.11	0.311	2.15	0.026	13.55	0.086	12.86	0.617	4.66	0.359	3.06	0.032	14.04	0.162
	Lung cancer	39.35		3.49		19.65		40.91		13.94		7.36		7.03		16.60	
Pleural Invasion	Yes	91.89	0.118	2.66	0.266	53.17	0.277	84.27	0.235	18.47	0.193	1.97	0.305	8.46	0.737	28.41	0.103
	No	29.70		3.64		13.49		32.94		13.11		8.36		6.77		14.43	
Lesion number	1	18.70	0.006	3.65	0.159	13.64	0.331	13.66	0.088	9.94	0.001	6.65	0.354	4.50	0.058	13.59	0.020
	≥ 2	89.36		2.76		28.45		100.32		24.62		10.92		11.90		23.65	
Lymph node infiltration	Yes	79.31	0.062	2.91	0.328	23.13	0.826	101.74	0.252	21.68	0.044	12.71	0.432	11.27	0.220	23.26	0.131
	No	28.00		3.66		19.02		23.61		11.69		5.88		5.87		14.71	
Gene mutation	Yes	91.96	0.400	3.34	0.808	57.66	0.687	140.37	0.345	18.68	0.991	2.69	0.318	9.91	0.678	26.27	0.249
	No	60.12		3.66		41.68		46.30		18.74		12.88		13.50		18.39	
Stage	I - II	14.75	0.002	3.43	0.811	9.28	0.126	13.86	0.087	9.89	0.003	6.38	0.562	2.72	0.017	13.56	0.026
	III - IV	82.69		3.59		37.92		88.57		21.08		9.11		14.62		21.95	

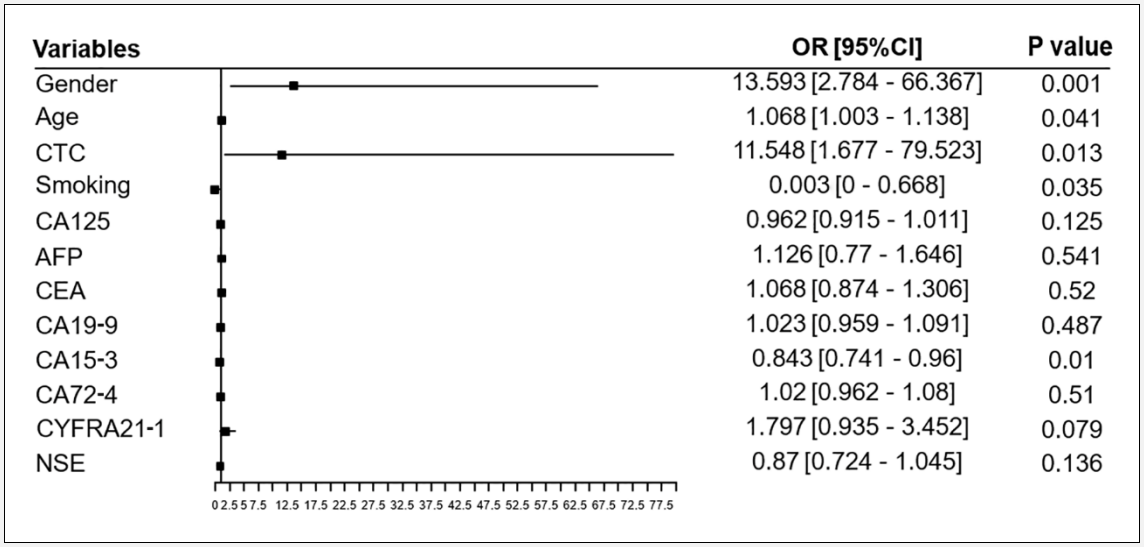

Figure S1. Forest plot showed the results of multi-variate regression analysis for patients.

The x-axis represents the OR with the reference line and significance was calculated using a logistical regression. The estimated ORs and their 95% CIs are presented as error bars.

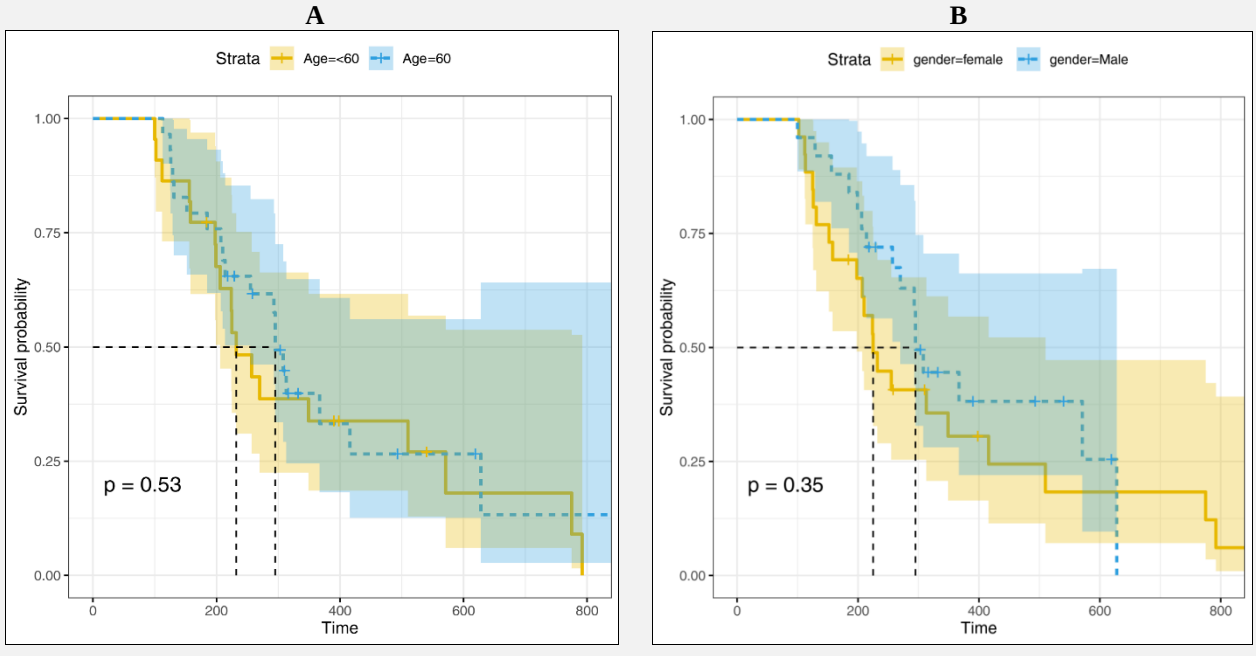

Figure S2. Kaplan-Meier curves of clinical characteristics for PFS in LC patients (C - H on the next page).

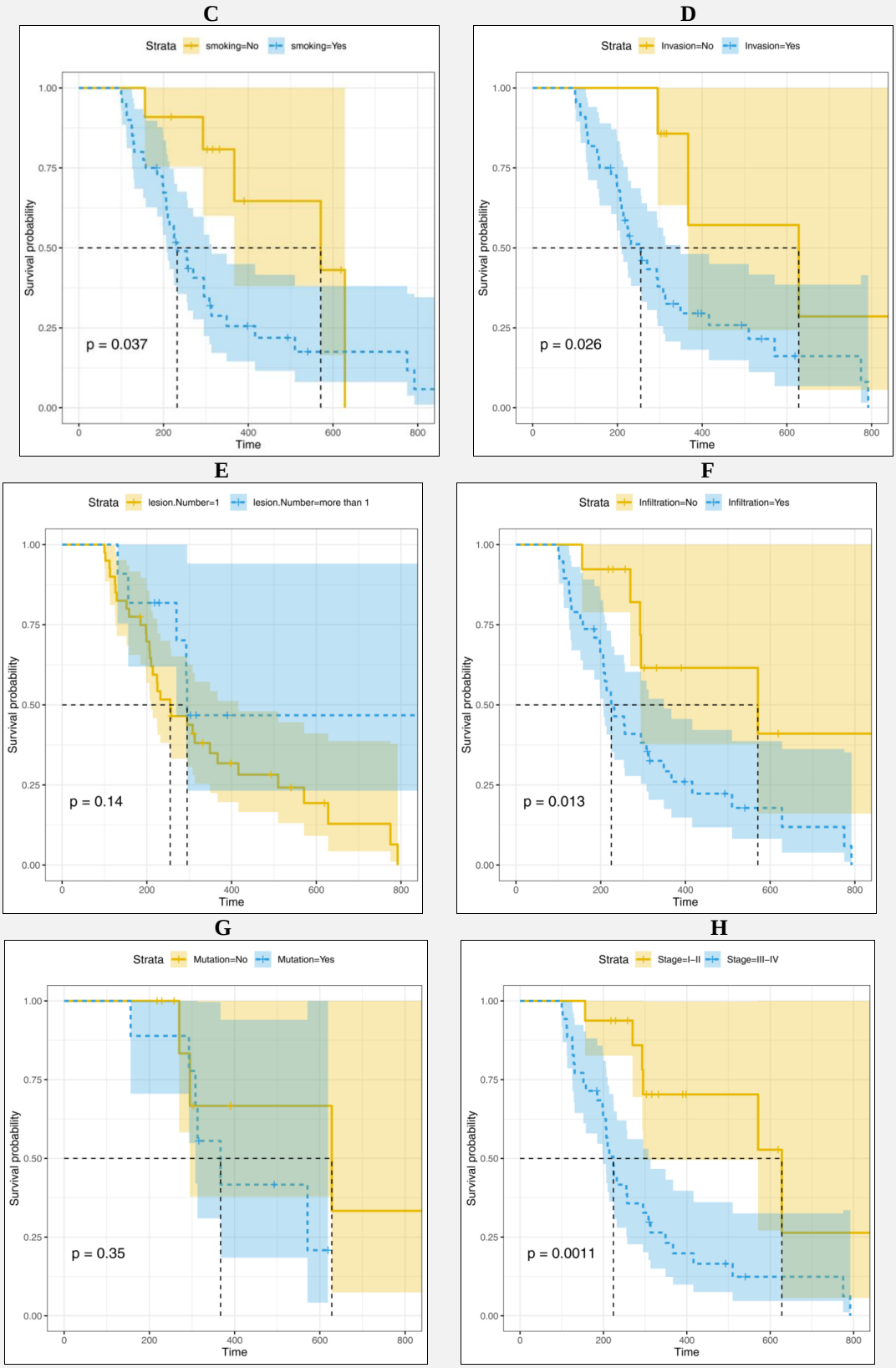

Figure S2. Kaplan-Meier curves of clinical characteristics for PFS in LC patients. A - H is age, gender, smoking, invasion, lesion, infiltration, mutation, and stage.

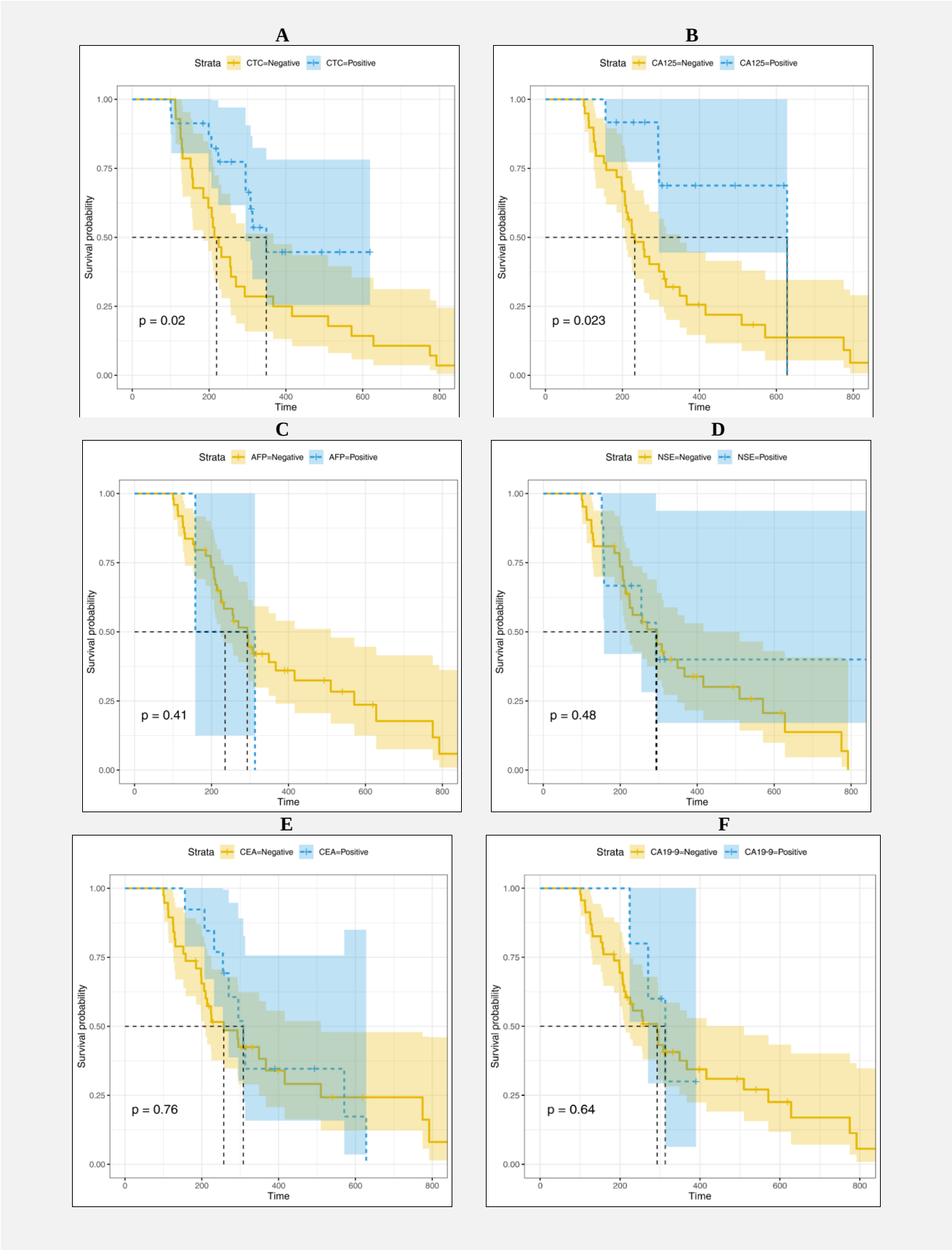

Figure S3. Kaplan-Meier curves of CTC and TMs for PFS in NSCLC patients (G - I on the next page).

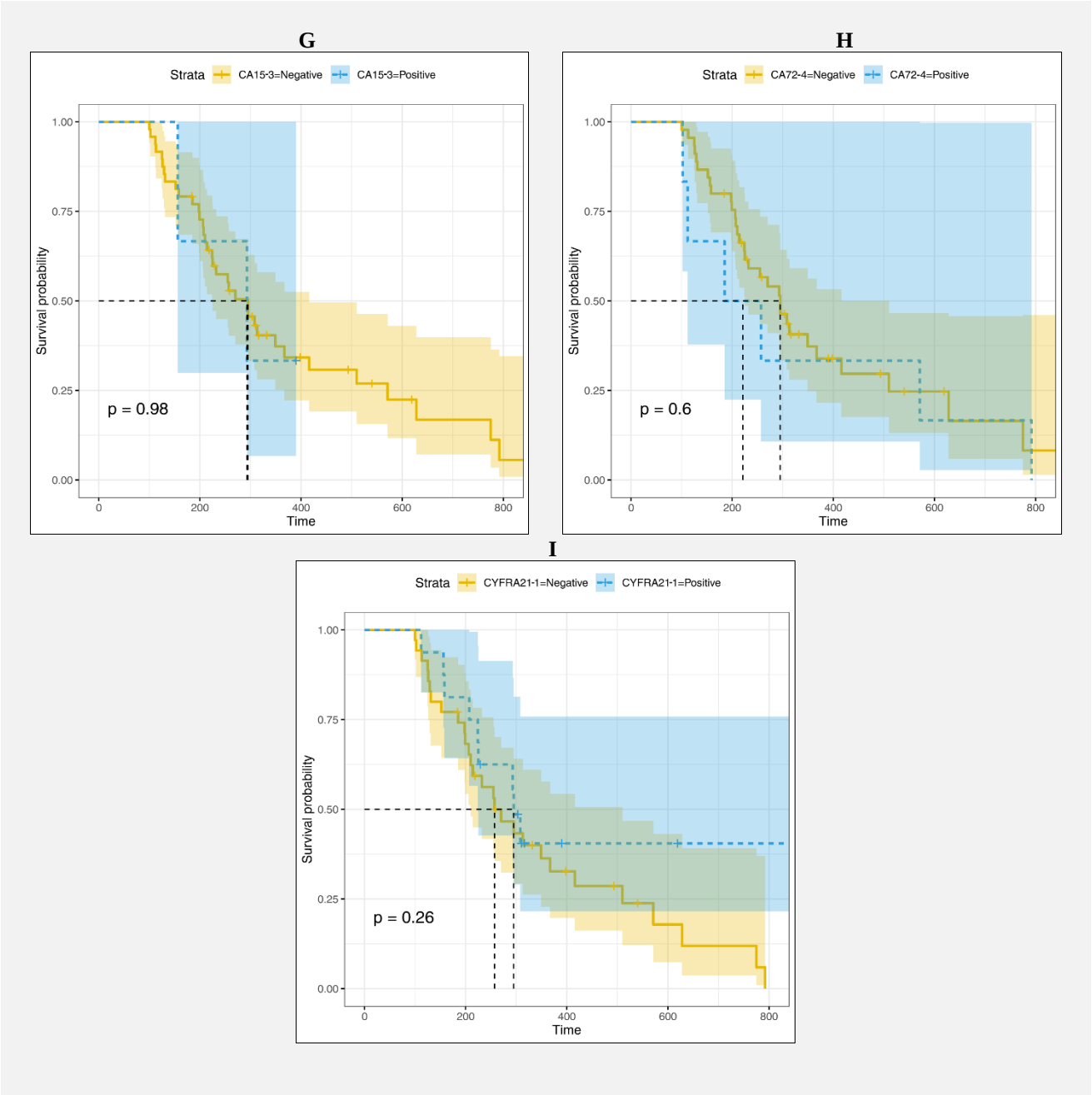

Figure S3. Kaplan-Meier curves of CTC and TMs for PFS in NSCLC patients. A - I are CTC, CA125, AFP, NSE, CEA, CA19-9, CA15-3, CA72-4, and CYFRA21-1.