

Table SI. Systemic inflammation-based prognostic scores and ratios.

Definition	Score or ratio	(Ref.)
Prognostic nutritional index		(23)
10 x albumin (g/dl) + 0.005 x lymphocyte count (/dl)	≥45	
10 x albumin (g/dl) + 0.005 x lymphocyte count (/dl)	<45	
GPS		(20)
C-reactive protein ≤1.0 (mg/dl) and albumin ≥3.5 (g/dl)	0	
C-reactive protein >1.0 (mg/dl) or albumin <3.5 (g/dl)	1	
C-reactive protein >1.0 (mg/dl) and albumin <3.5 (g/dl)	2	
Modified GPS		(25)
C-reactive protein ≤0.5 (mg/dl) and albumin ≥3.5 (g/dl)	0	
C-reactive protein >0.5 (mg/dl) or albumin <3.5 (g/dl)	1	
C-reactive protein >0.5 (mg/dl) and albumin <3.5 (g/dl)	2	
C-reactive protein-to-albumin ratio		(26)
C-reactive protein (mg/dl)/albumin (g/dl)	≤0.22	
C-reactive protein (mg/dl)/albumin (g/dl)	>0.22	
Neutrophil-to-lymphocyte ratio, (/μl)		(21)
Neutrophil count/lymphocyte count	<3	
Neutrophil count/lymphocyte count	≥3-<5	
Neutrophil count/lymphocyte count	≥5	
Platelet-to-lymphocyte ratio, (/μl)		(28)
Platelet count/lymphocyte count	≤150	
Platelet count/lymphocyte count	>150	
Lymphocyte-to-monocyte ratio, (/μl)		(29)
Lymphocyte count/monocyte count	≥2.40	
Lymphocyte count/monocyte count	<2.40	
Derived NLR, (/μl)		(30)
Neutrophil count/(leukocyte count-neutrophil count)	<3	
Neutrophil count/(leukocyte count-neutrophil count)	≥3-<5	
Neutrophil count/(leukocyte count-neutrophil count)	≥5	
Neutrophil-platelet score, (/μl)		(31)
Neutrophil count ≤7,500 and platelet count ≤400,000	0	
Neutrophil count >7,500 or platelet count >400,000	1	
Neutrophil count >7,500 and platelet count >400,000	2	
Neutrophil-lymphocyte score, (/μl)		(32,33)
Neutrophil count ≤7,500 and lymphocyte count ≥1,500	0	
Neutrophil count >7,500 or lymphocyte count <1,500	1	
Neutrophil count >7,500 and lymphocyte count <1,500	2	
Platelet-lymphocyte score, (/μl)		(32,33)
Platelet count ≤400,000 and lymphocyte count ≥1,500	0	
Platelet count >400,000 or lymphocyte count <1,500	1	
Platelet count >400,000 and lymphocyte count <1,500	2	
Lymphocyte-monocyte score, (/μl)		(32,33)
Lymphocyte count ≥1,500 and monocyte count ≤800	0	
Lymphocyte count <1,500 or monocyte count >800	1	
Lymphocyte count <1,500 and monocyte count >800	2	
Prognostic index		(34)
C-reactive protein ≤1.0 (mg/dl) and leukocyte count ≤11,000 (/μl)	0	
C-reactive protein >1.0 (mg/dl) or leukocyte count >11,000 (/μl)	1	
C-reactive protein >1.0 (mg/dl) and leukocyte count >11,000 (/μl)	2	
Systemic inflammation response index, (/μl)		(35)
(Neutrophil count x 10 x platelet count)/lymphocyte count	<300	
(Neutrophil count x 10 x platelet count)/lymphocyte count	≥300-<600	
(Neutrophil count x 10 x platelet count)/lymphocyte count	≥600-<1,000	
(Neutrophil count x 10 x platelet count)/lymphocyte count	≥1,000	
Systemic inflammation response index, (/μl)		(36)
(Neutrophil count x monocyte count)/lymphocyte count	<500	

(Neutrophil count x monocyte count)/lymphocyte count	≥500-<1,000	
(Neutrophil count x monocyte count)/lymphocyte count	≥1,000-<2,000	
(Neutrophil count x monocyte count)/lymphocyte count	≥2,000	(37)
Lung immune prognostic index		
dNLR ≤3 and lactate dehydrogenase ≤245 (U/l)	0	
dNLR >3 or lactate dehydrogenase >245 (U/l)	1	
dNLR >3 and lactate dehydrogenase >245 (U/l)	2	
C- reactive protein albumin lymphocyte index		
[Albumin (g/dl) x lymphocyte count (/μl)]/C-reactive protein (mg/dl)	<5	(38)
[Albumin (g/dl) x lymphocyte count (/μl)]/C-reactive protein (mg/dl)	≥5	

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GPS, Glasgow Prognostic Score; NLR, neutrophil-to-lymphocyte ratio.

Table SII. Patients medical and demographic characteristics.

Characteristics	Value reported
Total number of patients, n	159
Age at start of treatment	
Median (range)	70 (29-87)
<75 years, n (%)	120 (75.5)
≥75 years, n (%)	39 (24.5)
Sex	
Male, n (%)	111 (69.8)
Female, n (%)	48 (30.2)
BMI	
Median (range)	18.3 (11.3-30.5)
<18.5, n (%)	85 (53.5)
18.5-25.0, n (%)	66 (41.5)
≥25.0, n (%)	8 (5.0)
Smoking status, n (%)	
Current or former	128 (80.5)
Never smoked	25 (15.7)
N/A	6 (3.8)
Histology, n (%)	
Intestinal	65 (40.9)
Diffuse	58 (36.5)
Indeterminate	18 (11.3)
N/A	18 (11.3)
Primary site of disease, n (%)	
Gastric	139 (87.4)
Gastroesophageal junction	20 (12.6)
Clinical stage at initial diagnosis, n (%)	
I-II	15 (9.4)
III	44 (27.7)
IV	100 (62.9)
Eastern Cooperative Oncology Group performance status	
0	14 (8.8)
1	70 (44.0)
≥2	20 (12.6)
N/A	55 (34.6)
HER2 status, n (%)	
Positive	30 (18.9)
Negative	101 (63.5)
N/A	28 (17.6)
Disease status, n (%)	
Locally advanced	4 (2.5)
Metastatic	100 (62.9)
Recurrent	55 (34.6)

N/A, not available.

Table SIII. Summary of cancer treatments administered to patients.

Cancer treatment	Value reported
Total number of patients, n	159
Prior surgery, n (%)	
Curative	56 (35.2)
Palliative	27 (17.0)
None	76 (47.8)
Prior radiotherapy, n (%)	
Yes	8 (5.0)
No	150 (94.4)
N/A	1 (0.6)
Number of prior systemic therapeutic regimens	
Median (range)	3 (1-6)
≤2	68 (42.8)
3	56 (35.2)
≥4	35 (22.0)
Type of prior treatment regimen, n (%)	
Platinum	139 (87.4)
Fluoropyrimidine	156 (98.1)
Taxane	145 (91.2)
Irinotecan	25 (15.7)
Ramucirumab	131 (82.4)
Trastuzumab	26 (16.5)
Number of subsequent systemic therapeutic regimens after nivolumab treatment	
Median (range)	0 (0-3)
0	125 (78.6)
1	25 (15.7)
≥2	9 (5.7)
Type of sequential treatment regimen, n (%)	
Platinum	4 (2.5)
Fluoropyrimidine	7 (4.4)
Taxane	19 (11.9)
Irinotecan	9 (5.7)
Ramucirumab	2 (1.3)
Trastuzumab	1 (0.6)
Trifluridine/tipiracil	2 (1.3)
Sequential radiotherapy, n (%)	
Yes	0 (0.0)
No	159 (100)

Table SIV. Estimated hazard ratios and 95% CIs of prognostic factors for overall survival using univariate and multivariate Cox regression analyses.

Prognostic factor	Univariate analysis		Multivariate analysis	
	Hazard ratio (95% CI)	P-value	Hazard ratio (95% CI)	P-value
Sex				
Female	Reference		Reference	
Male	1.025 (0.679-1.549)	0.907	1.275 (0.754-2.158)	0.365
Age at start of first line treatment, years				
<75	Reference		Reference	
≥75	0.792 (0.502-1.250)	0.316	0.763 (0.464-1.255)	0.287
BMI				
≥18.5-<25.0	Reference		Reference	
<18.5	0.832 (0.561-1.234)	0.360	0.894 (0.577-1.386)	0.616
≤25.0	0.814 (0.323-2.051)	0.663	0.628 (0.227-1.733)	0.369
Brinkman index				
<400	Reference		Reference	
≥400	1.208 (0.686-2.127)	0.514	1.192 (0.612-2.321)	0.606
N/A	0.809 (0.256-2.558)	0.718	0.767 (0.227-2.590)	0.669
Eastern Cooperative Oncology Group performance status				
0	Reference		Reference	
1	1.034 (0.521-2.055)	0.923	1.098 (0.535-2.252)	0.799
≥2	1.478 (0.663-3.293)	0.339	1.360 (0.583-3.174)	0.477
N/A	1.007 (0.498-2.036)	0.984	1.273 (0.595-2.723)	0.533
Primary site of disease				
Gastric	Reference		Reference	
Gastroesophageal junction	0.643 (0.335-1.236)	0.185	0.627 (0.310-1.268)	0.193
Union for International Cancer Control stage				
I-III	Reference		Reference	
IV	1.353 (0.904-2.024)	0.141	1.573 (0.876-2.825)	0.129
Histology				
Intestinal	Reference		Reference	
Diffuse	1.167 (0.754-1.807)	0.488	1.180 (0.712-1.954)	0.521
Intermediate	0.895 (0.449-1.781)	0.751	0.958 (0.442-2.075)	0.913
N/A	1.178 (0.644-2.156)	0.595	1.512 (0.729-3.134)	0.266
HER2 status				
Negative	Reference		Reference	
Positive	0.999 (0.599-1.664)	0.995	0.994 (0.573-1.725)	0.984

N/A	0.936 (0.561-1.560)	0.800	1.181 (0.661-2.113)	0.574
Previous surgery				
No	Reference		Reference	
Curative	0.783 (0.511-1.200)	0.262	1.045 (0.578-1.888)	0.885
Palliative	0.896 (0.512-1.567)	0.700	0.936 (0.510-1.716)	0.829
Previous radiotherapy				
No	Reference		Reference	
Yes	0.326 (0.080-1.322)	0.117	0.222 (0.050-0.981)	0.047

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Table SV. Concordance and AIC of each model involving each score and adjusting factors, including age, sex, location, stage and previous radiotherapy.

Type of score	Concordance	AIC	Criteria	Patients, n	Events, n	Median overall survival, months	Hazard ratio (95% CI)	P-value
Modified GPS	0.713	5.565	0	35	12	N/A	Reference	
			1	55	40	132	3.277 (1.684-6.379)	<0.001
			2	53	41	83	5.601 (2.903-10.807)	<0.001
GPS	0.700	5.580	0	41	16	305	Reference	
			1	60	43	116	2.548 (1.415-4.548)	0.002
			2	42	34	64	5.092 (2.776-9.342)	<0.001
C-reactive protein-to-albumin ratio	0.679	5.619	≤0.22	79	42	241	Reference	
			>0.22	64	51	98	2.754 (1.810-4.192)	<0.001
Lung immune prognostic index	0.677	5.629	0	73	39	177	Reference	
			1	62	53	75	2.765 (1.798-4.253)	<0.001
			2	11	7	103	2.165 (0.944-4.964)	0.068
Systemic inflammation response index	0.672	5.642	<500	30	15	N/A	Reference	
			≥500-<1,000	33	17	223	1.141 (0.565-2.305)	0.713
			≥1,000-<2,000	33	26	106	2.738 (1.414-5.301)	0.003
			≥2,000	42	34	94	3.286 (1.755-6.154)	<0.001
Prognostic index	0.669	5.653	0	50	49	217	Reference	
			1	45	37	95	2.522 (1.623-3.919)	<0.001
			2	12	10	71	2.589 (1.287-5.205)	0.008
Platelet-to-lymphocyte ratio	0.669	5.713	≤150	60	35	223	Reference	
			>150	85	62	126	1.780 (1.152-2.751)	0.009
Prognostic nutritional index	0.667	5.622	≥45	28	9	N/A	Reference	
			<45	116	84	122	3.986 (1.978-8.031)	<0.001
			<3	114	70	163	Reference	
Derived NLR	0.661	5.674	≥3-<5	23	18	94	2.662 (1.539-4.606)	<0.001
			≥5	12	11	45	2.557 (1.317-4.964)	0.006
			<300	33	17	N/A	Reference	
Systemic immune-inflammation index	0.656	5.706	≥300-<600	35	22	209	1.677 (0.881-3.192)	0.115
			≥600-<1,000	27	20	138	2.097 (1.089-4.040)	0.027
			≥1,000	43	33	106	2.800 (1.531-5.119)	<0.001
			<3	74	41	241	Reference	
NLR	0.654	5.661	≥3-<5	37	28	106	2.454 (1.467-4.108)	0.001
			≥5	27	23	103	2.554 (1.515-4.108)	<0.001
Neutrophil-platelet score	0.637	5.715	0	126	80	177	Reference	

			1	18	15	122	1.833 (1.043-3.221)	0.035
			2	6	5	71	3.494 (1.356-9.007)	0.010
C-reactive protein albumin lymphocyte index	0.636	5.724	<5	110	71	138	Reference	
			≥5	29	23	109	1.823 (1.127-2.949)	0.015
			0	48	29	209	Reference	
Neutrophil-lymphocyte score	0.631	5.737	1	81	55	126	1.464 (0.921-2.328)	0.107
			2	9	8	122	2.570 (1.145-5.767)	0.022
			0	51	32	183	Reference	
Lymphocyte-monocyte score	0.628	5.745	1	88	60	125	1.418 (0.911-2.208)	0.122
			2	6	5	135	2.254 (0.843-6.028)	0.106
			≥2.40	97	58	183	Reference	
Lymphocyte-to-monocyte ratio	0.625	5.697	<2.40	48	39	98	2.000 (1.301-3.080)	0.002
			0	51	32	197	Reference	
Platelet-lymphocyte score	0.621	5.752	1	87	61	125	1.452 (0.935-2.256)	0.100
			2	7	4	230	1.329 (0.457-3.865)	0.602

AIC, Akaike information criterion; GPS, Glasgow prognostic score; NLR, neutrophil-to-lymphocyte ratio.

Table SVI. Concordance and Akaike information criterion of each score for time to treatment failure.

Type of score	Concordance	AIC
Modified GPS	0.603	8.128
GPS	0.595	8.152
C-reactive protein-to-albumin ratio	0.578	8.164
Lung immune prognostic index	0.589	8.125
Systemic inflammation response index	0.575	8.186
Prognostic index	0.548	8.192
Platelet-to-lymphocyte ratio	0.532	8.178
Prognostic nutritional index	0.573	8.151
NLR	0.564	8.18
Systemic immune-inflammation index	0.56	8.191
Derived NLR	0.576	8.161
Neutrophil-platelet score	0.51	8.194
C-reactive protein albumin lymphocyte index	0.56	8.155
Neutrophil-lymphocyte score	0.544	8.199
Lymphocyte-monocyte score	0.545	8.202
Lymphocyte-to-monocyte ratio	0.525	8.188
Platelet-lymphocyte score	0.539	8.202

GPS, Glasgow prognostic score; NLR, neutrophil-to-lymphocyte ratio.