

Table 1. The characteristics of the studies included.

Study	Ethnicity (country)	Sample size	Gender (M/F)	Age	Stage	NLR cutoff	PLR cutoff	LMR cutoff	PNI cutoff	SII cutoff	GPS cutoff	mGPS cutoff	CAR cutoff	Follow-up (months)	Treatment	Outcome	pathology	TP /FP /FN /TN (OS)
Wang L et al. (2017) ^[1]	China	280	233/47	64.071±7.412	0-IV	2	159	5.3	NR	560	NR	NR	NR	36	surgery	OS/DFS	SCC	SII:81 32 53 114
Feng JF et al. (2017) ^[2]	China	298	260/38	NR	I-III	5	150	NR	NR	410	NR	NR	NR	NR	surgery	CSS	SCC	SII:165 52 39 42
Nakatani M et al. (2017) ^[3]	Japan	66	56/10	64.7 ± 6.1	II-III	NR	NR	NR	45	NR	NR	NR	NR	31.9	surgery	OS/RFS	SCC	NR
Kubo N et al. (2017) ^[4]	Japan	202	162/40	63.73 ± 7.93	I-IV	NR	NR	NR	44	NR	NR	NR	NR	47.1	surgery	OS/RFS	SCC	NR
Hirahara N et al. (2018) ^[5]	Japan	169	150/19	PNI<49.2: 67.1±8.2 PNI≥49.2: 65.4±8.0	Ia-IIIc	NR	NR	NR	49.2	NR	NR	NR	NR	NR	surgery	OS/CSS	SCC	NR
Dai YQ et al. (2019) ^[6]	China	106	79/27	<65:82; ≥65:24	T1-4/N0-1	2.1	104.1	3.45	48.15	305.6	NR	NR	NR	19(2–190)	CRT	OS	SCC	PNI: 43 7 33 23
Ishibashi Y et al. (2018) ^[7]	Japan	143	121/22	70.6 ± 8.4(43–90)	I-IV	3	135	NR	NR	650	NR	NR	0.085	NR	surgery	OS/CSS	SCC/ADC /Others	SII: 39 17 46 41 NLR: 42 14 45 42 PLR: 66 28 24 25 CAR: 60 15 27 41
Zhang HD et al. (2018) ^[8]	China	655	537/118	61(27–88)	0-III	1.87	140.09	NR	52.28	387.65	NR	NR	NR	36.0(3–144)	surgery	OS	SCC	PLR: 148 81 236 190 SII: 259 146 125 125 PNI: 264 137 138 116
Yang YC et al. (2018) ^[9]	China	515	418/97	61(33–92)	I-III	1.2	130	NR	57	NR	NR	NR	NR	35(2–106)	surgery	OS	SCC	PLR: 143 67 168 137 PNI: 217 117 90 91
Wu CC et al. (2018) ^[10]	China	126	122/4	58(37–80)	IIIa-IIIc	2.5	103	NR	NR	NR	NR	0/1,2	0.95	NR	mixed	OS	SCC	CAR: 57 1 52 17 mGPS: 77 2 34 15
Wei XL et al. (2015) ^[11]	China	423	341/82	58(24–88)	I-IV	1.835	163.8	NR	49.05	NR	NR	0,1,2	0.095	35.7(0.6–95.6)	surgery	OS	SCC	CAR: 90 57 119 157
Geng YT et al. (2016) ^[12]	China	916	696/220	60.0(37–84)	0-III	1.7	120	3.57	NR	307	NR	NR	NR	39(3–146)	surgery	OS	SCC	SII: 279 227 113 140 LMR: 239 181

																			258 238
																			PLR: 275 183
																			238 220
Gao YB et al. (2019) ^[13]	China	468	376/92	59.5(36–81)	I-III	2.27	117.05	5.26	NR	479.72	NR	NR	NR	49.1±32.6(3.2–114.5)	surgery	OS/DFS	SCC	SII: 93 50 162	
																			163
																			PLR: 93 60 164
																			151
																			LMR: 96 69 155
																			148
Liu JS et al. (2015) ^[14]	China	326	283/43	59.2±7.9(38-80)	T1-4/N0-3	3.45	166	2.3	NR	NR	0/1,2	NR	NR	45	surgery	CSS	SCC	GPS: 108 31 95	
																			92
																			PLR: 114 28 89
																			95
																			LMR: 112 36 81
																			87
Hirahara N et al. (2016) ^[15]	Japan	147	132/15	<70: 46 ≥70: 101	Ia-IIIc	1.6	147	4	NR	NR	NR	NR	NR	42(3-111)	surgery	OS/CSS	SCC	LMR: 59 24 35	
																			29
																			PLR: 56 23 38
																			30
Han LH et al. (2015) ^[16]	China	218	177/41	60.5(32-84)	I-III	2.6	244	2.57	NR	NR	NR	NR	NR	38.6(3-71)	surgery	OS/DFS	SCC	NR	
Gao QF et al. (2018) ^[17]	China	153	128/25	61.93±6.72	0-III	2.1	145.9	2.3	NR	NR	NR	NR	NR	NR	surgery	OS	SCC	NR	
Kunkzaki M et al. (2018) ^[18]	Japan	116	98/18	66(44-83)	0-IV	5	150	NR	45	NR	0/1,2	0/1,2	0.042	NR	mixed	OS	SCC	CAR: 29 22 29	
																			36
Xu XL et al. (2015) ^[19]	China	468	416/52	58	I-IIIc	2.4	147	NR	NR	NR	0/1,2	0/1,2	0.5	49.9(10.9–88.0)	surgery	OS	NR	CAR: 72 15 216	
																			165
Toyokawa T et al. (2016) ^[20]	Japan	185	152/33	64(59–70)	I-IV	3.612	193	NR	NR	NR	0/1,2	NR	NR	81.5(IQR:45.8–112.3)	surgery	OS/RFS	SCC	NR	
Li KJ et al. (2019) ^[21]	China	204	171/33	65.8(38-85)	T1-4/N0-2	2.64	NR	3.03	NR	NR	NR	NR	NR	11.5(2.1-77.4)	CRT	OS/RFS	SCC	NR	
Fu XB et al. (2019) ^[22]	China	357	279/78	57(34-77)	I-IVa	2.27	NR	2.57	NR	SIS:0/1/2	NR	NR	NR	58(1–84)	surgery	OS	SCC	NLR: 77 50 100	
																			128
Zhang F et al. (2016) ^[23]	China	468	376/92	60(36-81)	I-III	2.5	117.07	NR	NR	NR	NR	NR	NR	49.1±32.6(3.2-14.5)	surgery	OS/DFS	SCC	NR	
Xie X et al. (2016) ^[24]	China	317	244/73	58.1±8.9(34–76)	I-III	2.1	103	NR	NR	NR	NR	NR	NR	46(36–62)	surgery	DSS	SCC	NR	
Wu YF et al. (2019) ^[25]	China	105	98/7	57.69±8.6(38-81)	I-III	4.35	NR	NR	NR	NR	NR	NR	NR	19.5±14.1	CRT	OS/PFS	SCC	PLR: 44 9 34 18	
																			NLR: 45 8 33 19
Feng JF et al.	China	483	411/72	59.1±8.0(34-80)	T1-4/N+	3.5	150	NR	NR	NR	NR	NR	NR	NR	surgery	OS	SCC	NLR:115 63 129	

al. (2014) ^[26]																			176
																			PLR: 148 72 96
																			167
Zhu YM et al. (2017) ^[27]	China	220	117/103	≤60/>60:124/96	T3N0M0	NR	NR	3.364	NR	NR	NR	NR	NR	DFS:40.0(34.2–45.8)	mixed	OS/DFS	SCC	LMR: 81 45 51	
														OS:53.0(48.0–58.0)				43	
Song Q et al. (2019) ^[28]	China	680	582/98	61(56-67)	Ia-IIIc	NR	NR	3.17	NR	NR	NR	NR	NR	NR	mixed	OS/DFS	SCC	LMR: 182 161	
																		135 202	
Chen MF et al. (2018) ^[29]	China	1168	1113/55	(<50/50-64/>64): 344/609/215	≤T2/T3-T4,N0/N+	3	NR	NR	NR	NR	NR	NR	NR	NR	mixed	OS/DFS	SCC	NLR: 567 77	
																		419 105	
Duan H et al. (2015) ^[30]	China	371	276/95	57.7±8.9	Ib-IIIc	3	NR	NR	NR	410	NR	NR	NR	66(49-76)	surgery	CSS/RFS	SCC	NR	
Gao GD et al. (2017) ^[31]	China	1281	988/293	Survival/Dead(634/647) 57.7±8.9/60.2±27.7	0-IV	2.86	NR	NR	NR	NR	NR	NR	NR	NR	mixed	OS	SCC	NR	
Han FY et al. (2019) ^[32]	China	354	267/87	<60/>=60:100/254	I-IV	1.88	NR	NR	NR	NR	NR	NR	NR	26(2-80)	surgery	OS/DFS	SCC/ADC	NR	
																		/Others	
Hirahara Noriyuki et al. (2018) ^[33]	Japan	148	132/16	CONUT 0/1/2-3(48/37/11) 61.5±5.4/61.8±5.9/60.4±5.3	Ia-IIIc	3.5	NR	NR	NR	NR	NR	NR	NR	NR	surgery	CSS	SCC	NR	
Kosumi K et al. (2016) ^[34]	Japan	313	248/35	<65/>=65(118/165)	0-IV	1.94	NR	NR	NR	NR	NR	NR	NR	33.6	surgery	OS/CSS	SCC	NR	
Lu YJ et al. (2019) ^[35]	China	315	259/56	59(35-75)	I-IVa	3.18	NR	NR	NR	NR	NR	NR	NR	NR	surgery	OS	SCC	NLR: 87 37 107	
																		84	
Nakamura K et al. (2017) ^[36]	Japan	245	219/26	<65/>=65:110/135	T1a-b/N0-3	2.42	NR	NR	NR	NR	NR	NR	NR	37.2	surgery	OS/DFS	SCC/ADC	NLR: 16 22 16	
																		/Others	
Sharaiha RZ et al. (2011) ^[37]	USA	295	237/58	62.8	I-IV	5	NR	NR	NR	NR	NR	NR	NR	31(13–61)	surgery	OS/DFS	SCC/ADC	NR	
																		/Others	
Xiao Q et al. (2016) ^[38]	China	121	106/15	62(30–76)	I-III	1.77	NR	NR	NR	NR	NR	NR	NR	28.0(1–102)	surgery	OS/RFS	SCC	NLR: 45 13 37	
																		26	
Zhou XL et al. (2017) ^[39]	China	517	407/110	65(36–74)	II-IV	5	NR	NR	NR	NR	NR	NR	NR	17(2-76)	CRT	OS/PFS	SCC	NLR: 188 12	
																		244 69	
Arigami T et al. (2015) ^[40]	Japan	238	210/28	65(37–87)	I-III	3	NR	NR	NR	NR	NR	0/1,2	NR	26(1-182)	surgery	OS	SCC	mGPS: 44 26 54	
																		114	
Lindenmann J et al. (2017) ^[41]	Austria	174	148/26	61.1(22-81)	T0-4/N0-3	NR	NR	NR	NR	NR	1-2 vs 0	NR	NR	NR	mixed	AC/CSS	ADC/SCC	GPS: 33 6 41 25	
Ma QL et al.	China	725	539/186	58(32-80)	TNM I/II/III	NR	NR	NR	NR	NR	1-2 vs 0	NR	NR	28	surgery	CSS	SCC	NR	

																	GPS0	107 66
Okadome K et al. (2018) ^[57]	Japan	337	300/37	65.9	I-IV	NR	NR	NR	45	NR	NR	NR	NR	60	Surgery	OS/CSS	SCC/ADC /Others	PNI: 63 24 62 92
Migita K et al. (2018) ^[58]	Japan	137	76/16	NR	T1-T4/N0-N+	2.2	NR	NR	47	NR	NR	NR	NR	NR	mixed	OS	SCC	NR
Zhang H et al. (2019) ^[59]	China	266	172/94	67(48-87)	I-III	3.06	145.26	NR	NR	NR	NR	NR	0.13	NR	curative RT only or concurrent CRT	OS	SCC	NLR: 107 28 68 63 PLR: 100 33 74 59 CAR: 104 10 59 93
Otowa Y et al. (2017) ^[60]	Japan	149	129/20	66.9±8.3	II/III	NR	NR	NR	NR	NR	NR	NR	0.030	NR	Mixed	OS	SCC	NR
Liu XQ et al. (2019) ^[61]													0.15		radical radiotherapy	OS		NR
Shao YJ et al. (2015) ^[62]	China	916	primary:633 validation:283	Primary:60(37-83) Validation:61(38-84)	I-III	1.7	120	3.57	NR	NR	0/1/2	0/1/2	0.06/0.12	39(3-146.2)	Surgery	OS	SCC	NR
Liu DQ et al. (2016) ^[63]	China	260	217/43	59(39-83)	I-IV	NR	NR	NR	NR	NR	0/1/2	NR	NR	40.5 (2-91)	surgery	OS/DFS	SCC	NR
Wang CY et al. (2012) ^[64]	Taiwan, China	271	261/10	NR	I-IV	NR	NR	NR	NR	NR	0/1,2	NR	NR	30 (5-81)	mixed	OS	SCC/ADC	NR
Feng JF et al. (2014) ^[65]	China	493	420/73	59.1(34 to 80)	T1-4a/N-+	NR	NR	NR	NR	NR	2/0	NR	NR	45	surgery	NR	SCC	NR
Lindenmann J et al. (2014) ^[66]	Austria	214	181/33	67 ± 11.84(21-93)	III-IV	NR	NR	NR	NR	NR	0/1/2	NR	NR	NR	CT+RT	NR	SCC/ADC	NR
Matsuda S et al. (2015) ^[67]	Japan	199	180/19	62.9 ± 8.29	I-IV	NR	NR	NR	NR	NR	0/1/2	NR	NR	28.5	mixed	OS/DFS	SCC/ADC /Others	NR
Liu XM et al. (2017) ^[68]	China	162	127/35	63 (38-70)	II-III	NR	NR	4.02	NR	NR	NR	NR	NR	23.3 (8-43.7)	mixed	OS/PFS	SCC	LMR: 61 20 43 38
Tian R et al. (2016) ^[69]	China	260	193/67	59.0 (20.0-87.0)	I-III	NR	NR	NR	NR	NR	NR	0/1,2	NR	46.5	surgery	OS/DFS	SCC	NR
Nakamura M et al. (2014) ^[70]	Japan	168	135/33	67(47-85)	0-IV	NR	NR	NR	NR	NR	NR	0 vs 2	NR	39(5-99)	mixed	NR	SCC	NR
Han LH et al. (2015) ^[71]	China	206	165/41	60(32-84)	I-IV/T1-4/N0-3	NR	NR	2.9	45.5	NR	NR	NR	NR	39.5(3-71)	surgery	OS/DFS	SCC	NR
Miyazaki T et al.	Japan	192	173/19	65.8(42-86)	I-IV/T1-4/N0-3/M0-1	3.49	NR	NR	47.7	NR	NR	NR	NR	26.5(1-108)	surgery	OS	NR	PNI: 31 34 39 88

(2016)^[72]

Abbreviations: OS, overall survival; CSS, cancer-specific survival; DFS, disease-free survival; EC, esophageal carcinoma; NLR, neutrophil-to-lymphocyte ratio; PLR, platelet-to-lymphocyte ratio; LMR, lymphocyte-to-monocyte ratio; CAR, c-reactive protein-to-albumin ratio; SII, systemic inflammation index; PNI, prognostic nutritional index; GPS, Glasgow Prognostic Score; mGPS, modified Glasgow Prognostic Score; TP, true-positive; FP, false-positive; TN, true-negative; FN, false-negative

Reference

- [1] Wang L, Wang C, Wang JF, Huang XC, Cheng YF. A novel systemic immune-inflammation index predicts survival and quality of life of patients after curative resection for esophageal squamous cell carcinoma. *Journal of Cancer Research and Clinical Oncology*, 2017, 143(10):2077-2086.
- [2] Feng JF, Chen S, Yang X. Systemic immune-inflammation index (SII) is a useful prognostic indicator for patients with squamous cell carcinoma of the esophagus. *Medicine*, 2017, 96(4).
- [3] Nakatani M, Migita K, Matsumoto S, Wakatsuki K, Ito M, Nakade H, Kunishige T, Kitano M, Kanehiro H. Prognostic significance of the prognostic nutritional index in esophageal cancer patients undergoing neoadjuvant chemotherapy. *Diseases of the Esophagus*, 2017, 30(8).
- [4] Kubo N, Ohira M, Tamura T, Sakurai K, Toyokawa T, Tanaka H, Yashiro M, Yamashita Y, Hirakawa K. Prognostic significance of baseline nutritional index for patients with esophageal squamous cell carcinoma after radical esophagectomy. *Esophagus*, 2017, 14(1):84-90.
- [5] Hirahara N, Tajima Y, Fujii Y, Kaji S, Yamamoto T, Hyakudomi R, Taniura T, Miyazaki Y, Kishi T, Kawabata Y. Preoperative Prognostic Nutritional Index Predicts Long-Term Surgical Outcomes in Patients with Esophageal Squamous Cell Carcinoma. *World Journal of Surgery*, 2018, 42(7):2199-2208.
- [6] Dai YQ, Fu XB, Li TT, Yao QW, Su LY, Su HY, Li JC. Long-term impact of prognostic nutritional index in cervical esophageal squamous cell carcinoma patients undergoing definitive radiotherapy. *Annals of Translational Medicine*, 2019, 7(8).
- [7] Ishibashi Y, Tsujimoto H, Hiraki S, Kumano I, Yaguchi Y, Horiguchi H, Nomura S, Ito N, Shinto E, Aosasa S, Yamamoto J, Ueno H. Prognostic Value of Preoperative Systemic Inflammatory Measures in Patients with Esophageal Cancer. *Annals of Surgical Oncology*, 2018, 25(11):3288-3299.
- [8] Zhang HD, Shang XB, Ren P, Gong L, Ahmed A, Ma Z, Ma R, Wu XX, Xiao XM, Jiang HJ, Tang P, Yu ZT. The predictive value of a preoperative systemic immune-inflammation index and prognostic nutritional index in patients with esophageal squamous cell carcinoma. *Journal of Cellular Physiology*, 2019, 234(2):1794-1802.
- [9] Yang YC, Xu H, Zhou LK, Deng T, Ning T, Liu R, Zhang L, Wang X, Ge SH, Li HL, Ba Y. Platelet to lymphocyte ratio is a predictive marker of prognosis and therapeutic effect of postoperative chemotherapy in non-metastatic esophageal squamous cell carcinoma. *Clinica Chimica Acta*, 2018, 479:160-165.
- [10] Wu CC, Li SH, Lu HI, Lo CM, Wang YM, Chou SY, Chen YH. Inflammation-based prognostic scores predict the prognosis of locally advanced cervical esophageal squamous cell carcinoma patients receiving curative concurrent chemoradiotherapy: a propensity score-matched analysis. *Peerj*, 2018, 6.
- [11] Wei XL, Wang FH, Zhang DS, Qiu MZ, Ren C, Jin Y, Zhou YX, Wang DS, He MM, Bai L, Wang F, Luo HY, Li YH, Xu RH. A novel inflammation-based prognostic score in esophageal squamous cell carcinoma: the C-reactive protein/albumin ratio. *Bmc Cancer*, 2015, 15.
- [12] Geng YT, Shao YJ, Zhu DX, Zheng X, Zhou Q, Zhou WJ, Ni XF, Wu CP, Jiang JT. Systemic Immune-Inflammation Index Predicts Prognosis of Patients with Esophageal Squamous Cell Carcinoma: A Propensity Score-matched Analysis. *Scientific Reports*, 2016, 6.
- [13] Gao YB, Guo W, Cai SH, Zhang F, Shao F, Zhang GC, Liu TJ, Tan FW, Li N, Xue Q, Gao SG, He J. Systemic immune-inflammation index (SII) is useful to predict survival outcomes in patients with surgically resected esophageal squamous cell carcinoma. *Journal of Cancer*, 2019, 10(14):3188-3196.
- [14] Liu JS, Huang Y, Yang X, Feng JF. A nomogram to predict prognostic values of various inflammatory biomarkers in patients with esophageal squamous cell carcinoma. *American Journal of Cancer Research*, 2015, 5(7):2180-2189.
- [15] Hirahara N, Matsubara T, Kawahara D, Nakada S, Ishibashi S, Tajima Y. Prognostic significance of preoperative inflammatory response biomarkers in patients undergoing curative thoracoscopic esophagectomy for esophageal squamous cell carcinoma. *Ejso*, 2016, 43(2):493-501.
- [16] Han LH, Jia YB, Song QX, Wang JB, Wang NN, Cheng YF. Prognostic significance of preoperative lymphocyte-monocyte ratio in patients with resectable esophageal squamous cell carcinoma. *Asian Pac J Cancer Prev*, 2015, 16(6):2245-2250.
- [17] Gao QF, Qiu JC, Huang XH, Xu YM, Li SQ, Sun F, Zhang J, Yang WM, Min QH, Jiang YH, Chen QG, Zhang L, Wang XZ, Ying HQ. The predictive and prognostic role of a novel ADS score in esophageal squamous cell carcinoma patients undergoing esophagectomy. *Cancer Cell International*, 2018, 18.
- [18] Kunizaki M, Tominaga T, Wakata K, Miyazaki T, Matsumoto K, Sumida Y, Hidaka S, Yamasaki T, Yasutake T, Sawai T, Hamamoto R, Nanashima A, Nagayasu T. Clinical significance of the C-reactive protein-to-albumin ratio for the prognosis of patients with esophageal squamous cell carcinoma. *Mol Clin Oncol*, 2018, 8(2):370-374.
- [19] Xu XL, Yu HQ, Hu W, Song Q, Mao WM. A Novel Inflammation-Based Prognostic Score, the C-Reactive Protein/Albumin Ratio Predicts the Prognosis of Patients with Operable Esophageal Squamous Cell Carcinoma. *Plos One*, 2015, 10(9).
- [20] Toyokawa T, Kubo N, Tamura T, Sakurai K, Amano R, Tanaka H, Muguruma K, Yashiro M, Hirakawa K, Ohira M. The pretreatment Controlling Nutritional Status (CONUT) score is an independent prognostic factor in patients with resectable thoracic

- esophageal squamous cell carcinoma: results from a retrospective study. *Bmc Cancer*, 2016, 16.
- [21] Li KJ, Xia XF, Su M, Zhang H, Chen WH, Zou CL. Predictive value of lymphocyte-to-monocyte ratio (LMR) and neutrophil-to-lymphocyte ratio (NLR) in patients with oesophageal cancer undergoing concurrent chemoradiotherapy. *Bmc Cancer*, 2019, 19(1).
- [22] Fu XB, Li TT, Dai YQ, Li JC. Preoperative systemic inflammation score (SIS) is superior to neutrophil to lymphocyte ratio (NLR) as a predicting indicator in patients with esophageal squamous cell carcinoma. *Bmc Cancer*, 2019, 19.
- [23] Zhang F, Chen ZL, Wang P, Hu XD, Gao YB, He J. Combination of platelet count and mean platelet volume (COP-MPV) predicts postoperative prognosis in both resectable early and advanced stage esophageal squamous cell cancer patients. *Tumor Biology*, 2016, 37(7):9323-9331.
- [24] Xie X, Luo KJ, Hu Y, Wang JY, Chen J. Prognostic value of preoperative platelet-lymphocyte and neutrophil-lymphocyte ratio in patients undergoing surgery for esophageal squamous cell cancer. *Diseases of the Esophagus*, 2016, 29(1):79-85.
- [25] Wu YF, Chu SC, Chang BS, Cheng YT, Wang TF. Hematologic Markers as Prognostic Factors in Nonmetastatic Esophageal Cancer Patients under Concurrent Chemoradiotherapy. *Biomed Research International*, 2019.
- [26] Feng JF, Huang Y, Chen QX. Preoperative platelet lymphocyte ratio (PLR) is superior to neutrophil lymphocyte ratio (NLR) as a predictive factor in patients with esophageal squamous cell carcinoma. *World Journal of Surgical Oncology*, 2014, 12.
- [27] Zhu YM, Li MH, Bo C, Liu XM, Zhang JB, Li ZX, Zhao F, Kong L, Yu JM. Prognostic significance of the lymphocyte-to-monocyte ratio and the tumor-infiltrating lymphocyte to tumor-associated macrophage ratio in patients with stage T3N0M0 esophageal squamous cell carcinoma. *Cancer Immunology Immunotherapy*, 2017, 66(3):343-354.
- [28] Song Q, Wu JZ, Wang S. Low Preoperative Lymphocyte to Monocyte Ratio Serves as a Worse Prognostic Marker in Patients with Esophageal Squamous Cell Carcinoma Undergoing Curative Tumor Resection. *Journal of Cancer*, 2019, 10(9):2057-2062.
- [29] Chen MF, Chen PT, Kuan FC, Chen WC. The Predictive Value of Pretreatment Neutrophil-To-Lymphocyte Ratio in Esophageal Squamous Cell Carcinoma. *Annals of Surgical Oncology*, 2019, 26(1):190-199.
- [30] Duan H, Zhang X, Wang FX, Cai MY, Ma GW, Yang H, Fu JH, Tan ZH, Meng YQ, Fu XY, Ma QL, Lin P. Prognostic role of neutrophil-lymphocyte ratio in operable esophageal squamous cell carcinoma. *World Journal of Gastroenterology*, 2015, 21(18):5591-5597.
- [31] Gao GD, Sun B, Wang XB, Wang SM. Neutrophil to lymphocyte ratio as prognostic indicator for patients with esophageal squamous cell cancer. *International Journal of Biological Markers*, 2017, 32(4):E409-E414.
- [32] Han FY, Liu YQ, Cheng SQ, Sun ZH, Sheng CC, Sun XY, Shang XM, Tian WJ, Wang XY, Li JM, Liu D, Wang Y, Zhang BC, Ju Y. Diagnosis and survival values of neutrophil-lymphocyte ratio (NLR) and red blood cell distribution width (RDW) in esophageal cancer. *Clinica Chimica Acta*, 2019, 488:150-158.
- [33] Hirahara N, Matsubara T, Hayashi H, Takai K, Nakada S, Tajima Y. Prognostic Importance of Controlling Nutritional Status in Patients Undergoing Curative Thoracoscopic Esophagectomy for Esophageal Cancer. *American Journal of Therapeutics*, 2018, 25(5):E524-E532.
- [34] Kosumi K, Baba Y, Ishimoto T, Harada K, Nakamura K, Ohuchi M, Kiyozumi Y, Izumi D, Tokunaga R, Taki K, Higashi T, Miyata T, Kurashige J, Hiyoshi Y, Iwagami S, Sakamoto Y, Miyamoto Y, Yoshida N, Watanabe M, Baba H. Neutrophil/lymphocyte ratio predicts the prognosis in esophageal squamous cell carcinoma patients. *Surgery Today*, 2016, 46(4):405-413.
- [35] Lv Y, Zhang J, Liu Z, Tian Y, Liu F. A novel inflammation-based prognostic index for patients with esophageal squamous cell carcinoma: Neutrophil lymphocyte ratio/prealbumin ratio. *Medicine (Baltimore)*, 2019, 98(7):e14562.
- [36] Nakamura K, Yoshida N, Baba Y, Kosumi K, Uchihara T, Kiyozumi Y, Ohuchi M, Ishimoto T, Iwatsuki M, Sakamoto Y, Watanabe M, Baba H. Elevated preoperative neutrophil-to-lymphocytes ratio predicts poor prognosis after esophagectomy in T1 esophageal cancer. *International Journal of Clinical Oncology*, 2017, 22(3):469-475.
- [37] Sharaiha RZ, Halazun KJ, Mirza F, Port JL, Lee PC, Neugut AI, Altorki NK, Abrams JA. Elevated Preoperative Neutrophil:Lymphocyte Ratio as a Predictor of Postoperative Disease Recurrence in Esophageal Cancer. *Annals of Surgical Oncology*, 2011, 18(12):3362-3369.
- [38] Xiao Q, Zhang BH, Deng X, Wu J, Wang H, Wang YG, Wang WX. The Preoperative Neutrophil-To-Lymphocyte Ratio Is a Novel Immune Parameter for the Prognosis of Esophageal Basaloid Squamous Cell Carcinoma. *Plos One*, 2016, 11(12).
- [39] Zhou XL, Li YQ, Zhu WG, Yu CH, Song YQ, Wang WW, He DC, Tao GZ, Tong YS. Neutrophil-to-lymphocyte ratio as a prognostic biomarker for patients with locally advanced esophageal squamous cell carcinoma treated with definitive chemoradiotherapy. *Scientific Reports*, 2017, 7.
- [40] Arigami T, Okumura H, Matsumoto M, Uchikado Y, Uenosono Y, Kita Y, Owaki T, Mori S, Kurahara H, Kijima Y, Ishigami S, Natsugoe S. Analysis of the Fibrinogen and Neutrophil-Lymphocyte Ratio in Esophageal Squamous Cell Carcinoma A Promising Blood Marker of Tumor Progression and Prognosis. *Medicine*, 2015, 94(42).
- [41] Lindenmann J, Fink-Neuboeck N, Avian A, Pichler M, Habitzruther M, Maier A, Smolle-Juettner FM. Preoperative Glasgow Prognostic Score as additional independent prognostic parameter for patients with esophageal cancer after curative esophagectomy. *Ejso*, 2017, 43(2):445-453.
- [42] Ma QL, Liu WG, Jia R, Jiang F, Duan H, Lin P, Zhang LJ, Long H, Zhao HY, Ma GW. Inflammation-based prognostic system predicts postoperative survival of esophageal carcinoma patients with normal preoperative serum carcinoembryonic antigen and squamous cell carcinoma antigen levels. *World Journal of Surgical Oncology*, 2016, 14.
- [43] Okuno T, Wakabayashi M, Kato K, Shinoda M, Katayama H, Igaki H, Tsubosa Y, Kojima T, Okabe H, Kimura Y, Kawano T, Kosugi S, Toh Y, Kato H, Nakamura K, Fukuda H, Ishikura S, Ando N, Kitagawa Y. Esophageal stenosis and the Glasgow Prognostic Score as independent factors of poor prognosis for patients with locally advanced unresectable esophageal cancer treated with chemoradiotherapy (exploratory analysis of JCOG0303). *International Journal of Clinical Oncology*, 2017, 22(6):1042-1049.
- [44] Sugawara K, Mori K, Yagi K, Aikou S, Uemura Y, Yamashita H, Seto Y. Association of preoperative inflammation-based prognostic score with survival in patients undergoing salvage esophagectomy. *Diseases of the Esophagus*, 2018, 32(4).
- [45] Vashist YK, Loos J, Dedow J, Tachezy M, Uzunoglu G, Kutup A, Yekebas EF, Izbicki JR. Glasgow Prognostic Score is a Predictor of Perioperative and Long-term Outcome in Patients with only Surgically Treated Esophageal Cancer. *Annals of*

- Surgical Oncology, 2011, 18(4):1130-1138.
- [46] Hirahara N, Matsubara T, Hayashi H, Takai K, Fujii Y, Tajima Y. Impact of inflammation-based prognostic score on survival after curative thoracoscopic esophagectomy for esophageal cancer. *Ejso*, 2015, 41(10):1308-1315.
- [47] Kitagawa H, Namikawa T, Munekage M, Fujisawa K, Kawanishi Y, Kobayashi M, Hanazaki K. Preoperative patient-related factors associated with prognosis after esophagectomy for esophageal cancer. *Esophagus*, 2017, 14(4):360-365.
- [48] Jomrich G, Paireder M, Gleiss A, Kristo I, Harpain L, Schoppmann SF. Comparison of Inflammation-Based Prognostic Scores in a Cohort of Patients with Resectable Esophageal Cancer. *Gastroenterology Research and Practice*, 2017.
- [49] Kimura J, Kunisaki C, Makino H, Oshima T, Ota M, Oba M, Takagawa R, Kosaka T, Ono HA, Akiyama H, Endo I. Evaluation of the Glasgow Prognostic Score in patients receiving chemoradiotherapy for stage III and IV esophageal cancer. *Diseases of the Esophagus*, 2016, 29(8):1071-1080.
- [50] Chen P, Fang M, Wan QY, Zhang XB, Song T, Wu SX. High-sensitivity modified Glasgow prognostic score (HS-mGPS) Is superior to the mGPS in esophageal cancer patients treated with chemoradiotherapy. *Oncotarget*, 2017, 8(59):99861-99870.
- [51] Otowa Y, Nakamura T, Takiguchi G, Tomono A, Yamamoto M, Kanaji S, Imanishi T, Suzuki S, Tanaka K, Itoh T, Kakeji Y. Changes in modified Glasgow prognostic score after neoadjuvant chemotherapy is a prognostic factor in clinical stage II/III esophageal cancer. *Diseases of the Esophagus*, 2016, 29(2):146-151.
- [52] Tian R, Zhang F, Sun P, Wu J, Yan H, Wu AR, Zhang M, Jiang YL, Lu YH, Xu QY, Zhan XH, Zhang RX, Qian LT, He J. The preoperative sensitive-modified Glasgow prognostic score is superior to the modified Glasgow prognostic score in predicting long-term survival for esophageal squamous cell carcinoma. *Oncotarget*, 2016, 7(41):67485-67494.
- [53] Walsh SM, Casey S, Kennedy R, Ravi N, Reynolds JV. Does the Modified Glasgow Prognostic Score (mGPS) Have a Prognostic Role in Esophageal Cancer? *Journal of Surgical Oncology*, 2016, 113(7):732-737.
- [54] Zhang P, Xi M, Li QQ, He LR, Liu SL, Zhao L, Shen JX, Liu MZ. The Modified Glasgow Prognostic Score Is an Independent Prognostic Factor in Patients with Inoperable Thoracic Esophageal Squamous Cell Carcinoma Undergoing Chemoradiotherapy. *Journal of Cancer*, 2014, 5(8):689-695.
- [55] Sun P, Zhang F, Chen C, An X, Li YH, Wang FH, Zhu ZH. Comparison of the prognostic values of various nutritional parameters in patients with esophageal squamous cell carcinoma from Southern China. *Journal of Thoracic Disease*, 2013, 5(4):484-491.
- [56] Chen S, Yang X, Feng JF. A novel inflammation-based prognostic score for patients with esophageal squamous cell carcinoma: the c-reactive protein/prognostic nutritional index ratio. *Oncotarget*, 2016, 7(38):62123-62132.
- [57] Okadome K, Baba Y, Yagi T, Kiyozumi Y, Ishimoto T, Iwatsuki M, Miyamoto Y, Yoshida N, Watanabe M, Baba H. Prognostic Nutritional Index, Tumor-infiltrating Lymphocytes, and Prognosis in Patients with Esophageal Cancer. *Ann Surg*, 2018.
- [58] Migita K, Matsumoto S, Wakatsuki K, Ito M, Kunishige T, Nakade H, Sho M. The Prognostic Significance of the Geriatric Nutritional Risk Index in Patients with Esophageal Squamous Cell Carcinoma. *Nutrition and Cancer-an International Journal*, 2018, 70(8):1237-1245.
- [59] Zhang H, Guo XW, Yin XX, Liu YC, Ji SJ. Nomogram-Integrated C-Reactive Protein/Albumin Ratio Predicts Efficacy And Prognosis In Patients With Thoracic Esophageal Squamous Cell Carcinoma Receiving Chemoradiotherapy. *Cancer Management and Research*, 2019, 11:9459-9468.
- [60] Otowa Y, Nakamura T, Yamamoto M, Kanaji S, Matsuda Y, Matsuda T, Oshikiri T, Sumi Y, Suzuki S, Kakeji Y. C-reactive protein to albumin ratio is a prognostic factor for patients with cStage II/III esophageal squamous cell cancer. *Diseases of the Esophagus*, 2017, 30(12).
- [61] Liu XQ, Chen W, Qiao TK. Prognostic significance of serum C-reactive protein to albumin ratios in esophageal cancer patients receiving radical radiotherapy. *International Journal of Clinical and Experimental Medicine*, 2019, 12(6):7585-7592.
- [62] Shao YJ, Ning ZH, Chen J, Geng YT, Gu WD, Huang J, Pei HL, Shen YP, Jiang JT. Prognostic nomogram integrated systemic inflammation score for patients with esophageal squamous cell carcinoma undergoing radical esophagectomy. *Scientific Reports*, 2015, 5.
- [63] Liu DQ, Li FF, Jia WH. Cumulative scores based on plasma D-dimer and serum albumin levels predict survival in esophageal squamous cell carcinoma patients treated with transthoracic esophagectomy. *Chinese Journal of Cancer*, 2016, 35.
- [64] Wang CY, Lee TF, Fang CH, Chou JH. Fuzzy Logic-Based Prognostic Score for Outcome Prediction in Esophageal Cancer. *Ieee Transactions on Information Technology in Biomedicine*, 2012, 16(6):1224-1230.
- [65] Feng JF, Zhao Q, Chen QX. Prognostic Significance of Glasgow prognostic score in patients undergoing esophagectomy for esophageal squamous cell carcinoma. *Saudi Journal of Gastroenterology*, 2014, 20(1):48-53.
- [66] Lindenmann J, Fink-Neuboeck N, Koesslbacher M, Pichler M, Stojakovic T, Roller RE, Maier A, Anegg U, Smolle J, Smolle-Juettner FM. The Influence of Elevated Levels of C-Reactive Protein and Hypoalbuminemia on Survival in Patients with Advanced Inoperable Esophageal Cancer Undergoing Palliative Treatment. *Journal of Surgical Oncology*, 2014, 110(6):645-650.
- [67] Matsuda S, Takeuchi H, Kawakubo H, Fukuda K, Nakamura R, Takahashi T, Wada N, Saikawa Y, Omori T, Kitagawa Y. Cumulative Prognostic Scores Based on Plasma Fibrinogen and Serum Albumin Levels in Esophageal Cancer Patients Treated with Transthoracic Esophagectomy: Comparison with the Glasgow Prognostic Score. *Annals of Surgical Oncology*, 2015, 22(1):302-310.
- [68] Liu XM, Li MH, Zhao F, Zhu YM, Luo YJ, Kong L, Zhu H, Zhang Y, Shi F, Yu JM. The lymphocyte-monocyte ratio predicts tumor response and survival in patients with locally advanced esophageal cancer who received definitive chemoradiotherapy. *Oncotargets and Therapy*, 2017, 10:871-877.
- [69] Tian R, Yan H, Zhang F, Sun P, Wu AR, Zhang M, Jiang YL, Wu J, Lu YH, Xu QY, Zhan XH, Zhang RX, Qian LT, He J. Cumulative score based on preoperative plasma fibrinogen and serum C-reactive protein could predict long-term survival for esophageal squamous cell carcinoma. *Oncotarget*, 2016, 7(38):61533-61543.
- [70] Nakamura M, Iwashita M, Nakamori M, Ojima T, Katsuda M, Iida T, Hayata K, Kato T, Yamaue H. New prognostic score for the survival of patients with esophageal squamous cell carcinoma. *Surg Today*, 2014, 44(5):875-883.
- [71] Han L, Song Q, Jia Y, Chen X, Wang C, Chen P, Min R, Cheng Y. The clinical significance of systemic inflammation score in esophageal squamous cell carcinoma. *Tumour Biol*, 2015, 37(3):3081-3090.
- [72] Miyazaki T, Sakai M, Sohda M, Tanaka N, Yokobori T, Motegi Y, Nakajima M, Fukuchi M, Kato H, Kuwano H. Prognostic Significance of Inflammatory and Nutritional Parameters in Patients with Esophageal Cancer. *Anticancer Res*, 2016, 36(12):6557-6562.