Original Article

Value of the systemic immune inflammation index in predicting the efficacy of neoadjuvant chemotherapy in patients with gastric cancer: a multicenter retrospective clinical study

Li Yang[1#], Min Chen[2#], Wei Wang[3], Minghui Meng[4], Fengying Wu[5], Jiani Lv[6], Arvind Sahu[7,8], Yuanyuan Jiao[1]

[1]Department of Internal Medicine, The Fifth Hospital of Shijiazhuang Hebei Province, Shijiazhuang, China; [2]Department of Gastroenterology, Yangxin County People's Hospital, Huangshi, China; [3]Department of Pediatrics, The Fifth Hospital of Shijiazhuang Hebei Province, Shijiazhuang, China; [4]Department of Infectious Disease, The Fifth Hospital of Shijiazhuang Hebei Province, Shijiazhuang, China; [5]Department of Emergency, The Fifth Hospital of Shijiazhuang Hebei Province, Shijiazhuang, China; [6]Department of Pharmacy, The First Affiated Hospital of Zhejiang Chinese Medical University, Zhejiang Hospital of Traditional Chinese Medicine, Hangzhou, China; [7]Department of Oncology, Goulburn Valley Health, Shepparton, Australia; [8]Department of Rural Health, University of Melbourne, Shepparton Campus, Shepparton, Australia

Contributions: (I) Conception and design: L Yang, J Lv, W Wang; (II) Administrative support: M Meng, F Wu; (III) Provision of study materials or patients: L Yang, J Lv, W Wang; (IV) Collection and assembly of data: Y Jiao, M Chen, M Meng; (V) Data analysis and interpretation: All authors; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

[#]These authors contributed equally to this work.

Correspondence to: Yuanyuan Jiao, BS. Department of Internal Medicine, The Fifth Hospital of Shijiazhuang Hebei Province, No. 42, Tanan Road, Yuhua District, Shijiazhuang 050000, China. Email: 18332313582@163.com.

Background: Neoadjuvant chemotherapy is the primary treatment for locally advanced gastric cancer, and the efficacy of neoadjuvant chemotherapy has an important impact on the long-term prognosis of patients with gastric cancer. Accurately predicting the efficacy of neoadjuvant chemotherapy in patients with gastric cancer is critical to treatment planning, so it is necessary to identify the biological indicators of treatment efficacy. This study aimed to analyze the value of the systemic immune inflammation index in predicting the efficacy of neoadjuvant chemotherapy in patients with gastric cancer.

Methods: From January 2020 to December 2021, a total of 182 patients with locally advanced gastric cancer admitted to The Fifth Hospital of Shijiazhuang Hebei Province and Yangxin County People's Hospital and who received neoadjuvant chemotherapy were retrospectively enrolled. The patients were divided into an objective remission group (n=112) and a control group (no objective remission; n=70) according to the efficacy of neoadjuvant chemotherapy. Multivariate logistics regression was used to analyze the influencing factors of efficacy in patients with gastric cancer treated with neoadjuvant chemotherapy. Finally, the patients of the two groups were followed up for 3 years, and the recurrence, metastasis, and mortality of the two groups were observed.

Results: There were significant differences in the systemic immune inflammatory index, Ki-67 expression, lymph node metastasis, and tumor cell differentiation between the two groups (P<0.05). A high systemic immune inflammatory index score and poorly differentiated cancer were unfavorable factors for objective remission in patients treated with neoadjuvant chemotherapy, with relative risks of 0.974 (95% confidence interval: 0.965–0.982) and 0.086 (95% confidence interval: 0.022–0.338), respectively. Meanwhile, a high Ki-67 expression was a favorable factor for objective remission in patients with gastric cancer treated with neoadjuvant chemotherapy, with a relative risk of 1.090 (95% confidence interval: 1.034–1.148). The systemic immune inflammation index demonstrated high value in predicting objective remission in patients with gastric cancer treated with neoadjuvant chemotherapy, with an area under the curve of 0.947 (95% confidence interval: 0.914–0.981). Compared with that in the control group, the radical resection rate in the objective remission group was significantly higher (P>0.05). The 3-year recurrence rate, metastasis rate, and mortality rate were significantly lower in the objective remission group than in the control group (P<0.05).

Conclusions: The efficacy of neoadjuvant chemotherapy in patients with locally advanced gastric cancer has an important impact on prognosis, and the systemic immune inflammation index is a reliable biological indicator for the efficacy of this treatment.

Keywords: Systemic immune inflammation index; neoadjuvant chemotherapy; gastric cancer

Submitted May 29, 2025. Accepted for publication Jul 04, 2025. Published online Jul 25, 2025.
doi: 10.21037/jgo-2025-423
View this article at: https://dx.doi.org/10.21037/jgo-2025-423

Introduction

Gastric cancer is a common tumor of the digestive tract and is associated with high malignancy and mortality (1). Neoadjuvant chemotherapy has become an important method for the treatment of patients with gastric cancer, and it can effectively improve the prognosis of patients with locally advanced disease (2). Patients who achieve complete pathologic remission after neoadjuvant chemotherapy have a significantly improved prognosis. In one study, objective response rate (52.2% *vs.* 35.4%) and disease control rate (91.3% *vs.* 81.3%) were increased in bevacizumab plus chemotherapy group versus chemotherapy group (3). Patients who do not respond to neoadjuvant chemotherapy may miss the opportunity for surgery, so it is important to accurately predict the efficacy of neoadjuvant chemotherapy before it is initiated.

The systematic immune inflammation index is a new type of inflammation index proposed in recent years. It is calculated using a specific formula and is more stable and reliable compared to a single inflammation index. It also has the advantages of being easy to obtain, low in price, and uniform in calculation standards. A higher systemic immune inflammatory index indicates a higher level of inflammation and a lower degree of immune function. In turn, these are associated with a greater likelihood of tumor occurrence and progression, and thus this index has been used in numerous studies to predict the prognosis of patients with malignant tumors (4-6). One study confirmed the systemic immune inflammatory index to be an independent indicator of overall survival in patients with gastric cancer, with a relative risk of 1.53 (95% confidence interval: 1.27–1.83) (7). Another study on patients with pancreatic cancer demonstrated the systemic immune inflammatory index to be a reliable biological indicator for the efficacy of neoadjuvant chemotherapy (8). However, little to no research has been conducted on the application of the systemic immune inflammatory index in patients with gastric cancer receiving neoadjuvant chemotherapy. Therefore, this study was performed to assess the value of the systemic immune inflammatory index in predicting the efficacy of neoadjuvant chemotherapy for patients with gastric cancer. We present this article in accordance with the TRIPOD reporting checklist (available at https://jgo.amegroups.com/article/view/10.21037/jgo-2025-423/rc).

Highlight box

Key findings

- The systemic immune inflammation index is a reliable biological indicator of the efficacy of neoadjuvant chemotherapy in patients with gastric cancer.

What is known and what is new?

- Neoadjuvant chemotherapy is an important means to improve the long-term survival of patients with locally advanced gastric cancer.
- The systemic immune inflammation index is an indicator for the efficacy of neoadjuvant chemotherapy in patients with gastric cancer.

What is the implication, and what should change now?

- The relationship between systemic immune inflammation index and prognosis of patients with gastric cancer undergoing neoadjuvant chemotherapy should be examined at the molecular level.

Methods

General information

From January 2020 to December 2021, a total of 182 patients with locally advanced gastric cancer admitted to The Fifth Hospital of Shijiazhuang Hebei Province and Yangxin County People's Hospital and who received neoadjuvant chemotherapy were retrospectively enrolled. The patients were divided into an objective remission group (n=112) and a control group (no objective remission; n=70) according to the efficacy of neoadjuvant chemotherapy. The

inclusion criteria were as follows: (I) locally advanced gastric cancer, the diagnosis of locally advanced gastric cancer was according to the National Comprehensive Cancer Network (NCCN) guidelines for gastric cancer (9); (II) age ≥18 years old; and (III) administration of neoadjuvant chemotherapy and surgery. Meanwhile, the exclusion criteria were as follows: (I) recurrent gastric cancer or distant metastasis; (II) combination with other malignant tumors; (III) a history of previous gastrointestinal surgery; (IV) dysfunction of important organs such as the liver, kidney, heart, brain, and lungs; (V) infections or autoimmune disease; and (VI) lost to follow-up. The study was conducted in accordance with the Declaration of Helsinki and its subsequent amendments. This study was approved by the Ethics Committee of Yangxin County People's Hospital (No. 202301281). The requirement for individual consent was waived due to the retrospective nature of the analysis. The Fifth Hospital of Shijiazhuang Hebei Province was informed and agreed with this study.

Treatment

All patients were administered neoadjuvant chemotherapy consisting capecitabine (Xeloda) and oxaliplatin (XELOX) after baseline evaluation. The details of the regimen were as follows: oxaliplatin was administered at 130 mg/m^2 on day 1, and capecitabine was administered at 1,000 mg/m^2 on days 1 to 14. One cycle consisted of 21 days, and four cycles were administered.

Data collection

The data collected from the groups included (I) general characteristics, specifically age, body mass index, hypertension, diabetes mellitus, hyperlipidemia, helicobacter pylori infection; (II) tumor characteristics, including tumor location, tumor maximum diameter, tumor invasion depth, lymph node metastasis, tumor cell type, tumor differentiation degree, and Ki-67 expression; (III) efficacy of neoadjuvant chemotherapy, as determined by the World Health Organization Efficacy Evaluation Criteria for Solid Tumors (including classifications of complete remission, partial remission, stable disease, and disease progression), and objective remission rate (complete remission + partial remission), the objective remission was defined if the sum of the diameters of all measurable target lesions showed a reduction of ≥30% compared to the baseline; (IV) the radical resection rate; and (V) prognosis, including the 3-year recurrence rate, metastasis rate, and mortality rate.

Statistical analysis

SPSS 26.0 (International Business Machines Corporation, Armonk, New York, United States of America) was used to complete the data analysis of this study, with $P<0.05$ indicating a statistically significant difference. The continuous data were all normally distributed and thus are expressed as the mean ± standard deviation; the independent samples *t*-test was used to analyze the differences between groups. Meanwhile, count data are expressed as numbers and percentages, and the Chi-squared test was used to analyze the differences between groups. The receiver operating characteristic (ROC) curve was used to predict the objective remission rate. Multivariate logistics regression analysis was applied to identify the influencing factors of objective remission after neoadjuvant chemotherapy in patients with locally advanced gastric cancer.

Results

Patient inclusion

During the study, a total of 241 patients (142 patients were from The Fifth Hospital of Shijiazhuang Hebei Province and 99 patients were from Yangxin County People's Hospital) met the inclusion criteria, 59 of whom also met the exclusion criteria, and thus a total of 182 patients (106 patients were from The Fifth Hospital of Shijiazhuang Hebei Province and 76 patients were from Yangxin County People's Hospital) were finally included in this study (*Figure 1*).

Comparison of the preoperative clinical characteristics and prognosis between the two centers

There were no significant differences in the preoperative clinical characteristics and prognosis between the two centers ($P<0.05$, *Table 1*).

Comparison of the preoperative clinical characteristics of the two groups

There were significantly statistical differences in neutrophil percentage, lymphocyte percentage, platelet count, systemic immune inflammatory index, Ki-67 expression, lymph node metastasis, and tumor cell differentiation between the two

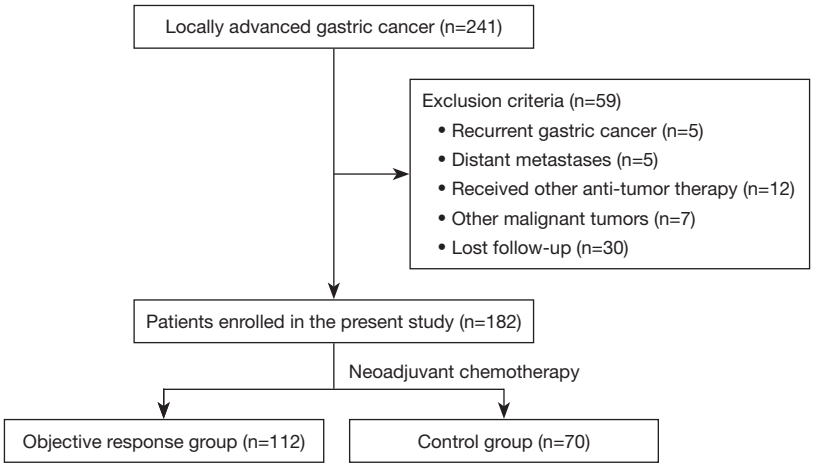

Figure 1 Flowchart of patient inclusion.

groups (P<0.05, *Table 2*).

Analysis of influencing factors of objective remission rate in patients with gastric cancer treated with neoadjuvant chemotherapy

A high systemic immune inflammatory index score and poorly differentiated cancer were unfavorable factors for objective remission in patients with neoadjuvant chemotherapy, with relative risks of 0.974 (95% confidence interval: 0.965–0.982) and 0.086 (95% confidence interval: 0.022–0.338), respectively; meanwhile, a high Ki-67 expression was a favorable factor for objective remission in patients with gastric cancer treated with neoadjuvant chemotherapy, with a relative risk of 1.090 (95% confidence interval: 1.034–1.148) (*Table 3*).

Value of the systemic immune inflammation index in predicting objective remission in patients with gastric cancer receiving neoadjuvant chemotherapy

The systemic immune inflammation index had a high predictive value for objective remission in patients with gastric cancer treated with neoadjuvant chemotherapy, with an area under the curve of 0.947 (95% confidence interval: 0.914–0.981) (*Figure 2*).

Prognostic analysis of the two groups

Compared with that of the control group, the radical surgical resection rate of the objective remission group was significantly higher (P=0.02). The 3-year recurrence rate, metastasis rate, and mortality rate were significantly lower in the objective remission group than in the control group (P<0.05, *Table 4*).

Discussion

Neoadjuvant chemotherapy is an important component in the multidisciplinary treatment of advanced gastric cancer, which has the aims of downstaging the tumor, improving the rate of radical resection, and evaluating the sensitivity of chemotherapy (10,11). At present, the evaluation of the efficacy and prognosis of neoadjuvant chemotherapy mainly relies on imaging, pathology, immunohistochemistry, and other examinations, but these methods are complex and expensive (12-14). Peripheral blood tumor markers are simple and easy to test but lack specificity in gastric cancer. In order to identify the potential indicators related to neoadjuvant chemotherapy in patients with gastric cancer, we assessed the predictive ability of the systemic immune inflammatory index. We found that the systemic immune inflammatory index score of patients with gastric cancer who achieved objective remission after neoadjuvant chemotherapy was significantly lower; meanwhile, a higher score was an unfavorable factor for objective remission in patients treated with neoadjuvant chemotherapy, with a relative risk of 0.974 (95% confidence interval: 0.965–0.982). The systemic immune inflammation index demonstrated a high predictive value for objective remission in patients with gastric cancer treated with neoadjuvant chemotherapy, with an area under the curve of 0.947 (95%

Table 1 Comparison of the preoperative clinical characteristics and prognosis between the two centers

Variable	The Fifth Hospital of Shijiazhuang Hebei Province (n=106)	Yangxin County People's Hospital (n=76)	t/χ^2 value	P value
Age (years)	57.97±7.42	57.67±7.08	0.274	0.78
Body mass index (kg/m^2)	23.88±2.31	23.97±2.28	0.261	0.79
Hypertension	13 (12.26)	7 (9.21)	0.422	0.52
Diabetes	10 (9.43)	8 (10.53)	0.059	0.81
Hyperlipidemia	14 (13.21)	11 (14.47)	0.060	0.81
Neutrophil percentage (%)	61.97±9.99	62.50±8.74	0.371	0.71
Lymphocyte percentage (%)	24.72±4.96	24.43±4.62	0.390	0.70
Platelet count (10^9/L)	149.48±31.83	146.66±32.99	0.581	0.56
Systemic immune inflammatory index	396.05±149.91	396.77±161.55	0.031	0.98
Helicobacter pylori infection	74 (69.81)	48 (63.16)	0.887	0.35
Ki-67 expression (%)	53.45±17.63	51.62±14.76	0.740	0.46
Lymph node metastasis	42 (39.62)	29 (38.16)	0.040	0.84
Differentiation of tumor cells			0.554	0.46
Poor differentiation	42 (39.62)	26 (34.21)		
Medium-to-high differentiation	64 (60.38)	50 (65.79)		
Maximum tumor diameter (cm)	4.08±1.48	4.05±1.50	0.134	0.89
Tumor location			0.692	0.71
Cardia	41 (38.68)	34 (44.74)		
Gastric antrum	30 (28.30)	20 (26.32)		
Other	35 (33.02)	22 (28.95)		
Depth of tumor invasion			1.615	0.45
Myometrium	20 (18.87)	19 (25.00)		
Mucosal layer	58 (54.72)	42 (55.26)		
Surrounding tissues	28 (26.42)	15 (19.74)		
Tumor cell type			2.554	0.28
Adenocarcinoma	78 (73.58)	48 (63.16)		
Adenosquamous cell cancer	16 (15.09)	14 (18.42)		
Undifferentiated cancer	12 (11.32)	14 (18.42)		
Radical resection	98 (92.45)	70 (92.11)	0.008	0.93
3-year recurrence	57 (53.77)	40 (52.63)	0.023	0.88
3-year metastasis	57 (53.77)	32 (42.11)	2.411	0.12
3-year mortality	33 (31.13)	18 (23.68)	1.217	0.27

Data are presented as n (%) or mean ± standard deviation.

Table 2 Comparison of the preoperative clinical characteristics of the two groups

Variable	Objective remission group (n=112)	Control group (n=70)	t/χ^2 value	P value
Age (years)	57.71±6.82	58.08±7.02	0.352	0.73
Body mass index (kg/m^2)	23.84±2.27	24.04±2.18	0.587	0.56
Hypertension	12 (10.71)	8 (11.43)	0.022	0.88
Diabetes	10 (8.93)	8 (11.43)	0.302	0.58
Hyperlipidemia	12 (10.71)	13 (18.57)	2.244	0.13
Neutrophil percentage (%)	58.94±7.87	67.40±9.51	6.504	<0.001
Lymphocyte percentage (%)	26.73±4.01	21.19±3.95	9.132	<0.001
Platelet count (10^9/L)	136.42±26.07	167.31±32.25	7.090	<0.001
Systemic immune inflammatory index	305.01±75.32	542.50±135.02	15.221	<0.001
Helicobacter pylori infection	78 (69.64)	44 (62.86)	0.898	0.34
Ki-67 expression (%)	57.63±16.13	44.77±13.79	5.527	<0.001
Lymph node metastasis	36 (32.14)	35 (50.00)	5.773	0.02
Differentiation of tumor cells			24.908	<0.001
Poor differentiation	26 (23.21)	42 (60.00)		
Medium-to-high differentiation	86 (76.79)	28 (40.00)		
Maximum tumor diameter (cm)	4.12±1.62	3.98±1.44	0.591	0.56
Tumor location			0.962	0.62
Cardia	43 (38.39)	32 (45.71)		
Gastric antrum	32 (28.57)	18 (25.71)		
Other	37 (33.04)	20 (28.57)		
Depth of tumor invasion			1.617	0.45
Myometrium	21 (18.75)	18 (25.71)		
Mucosal layer	62 (55.36)	38 (54.29)		
Surrounding tissues	29 (25.89)	14 (20.00)		
Tumor cell type			3.297	0.19
Adenocarcinoma	82 (73.21)	44 (62.86)		
Adenosquamous cell cancer	18 (16.07)	12 (17.14)		
Undifferentiated cancer	12 (10.71)	14 (20.00)		

Data are presented as n (%) or mean ± standard deviation.

Table 3 Factors influencing the objective remission rate of patients with gastric cancer receiving neoadjuvant chemotherapy

Variable	B value	Standard error	Wald value	P value	Relative risk (95% confidence interval)
Systemic immune inflammatory index	−0.026	0.004	34.954	<0.001	0.974 (0.965–0.982)
Ki-67 expression	0.086	0.027	10.459	0.001	1.090 (1.034–1.148)
Lymph node metastasis	−0.477	0.642	0.554	0.46	0.620 (0.176–2.182)
Poor differentiation	−2.454	0.698	12.344	<0.001	0.086 (0.022–0.338)
Constant coefficient	7.949	1.862	18.220	<0.001	–

confidence interval: 0.914–0.981).

The systemic immune inflammatory index (neutrophil percentage × platelet count / lymphocyte percentage) can reflect the balance between the inflammatory status and the immune response of patients (15). When the systemic immune inflammatory index of patients with gastric cancer increases, it indicates an elevation in neutrophil and platelet levels but a decrease in lymphocyte level. An increase in neutrophil count indicates an elevated inflammatory state in the patient, which in turn is conducive to the formation of local blood vessels in the tumor and the rapid growth and metastasis of tumor cells, which ultimately lead to a poor prognosis (16,17). Platelets are small pieces of cytoplasm shed from the cytoplasm of mature megakaryocytes in the bone marrow and are involved in biological processes such as tumor growth, tumor cell extravasation, and tumor metastasis, which can inhibit the apoptosis of tumor cells and maintain the integrity of tumor blood vessels. A high platelet count can promote tumor blood vessel formation, which in turn leads to the rapid growth and metastasis of tumor cells (18,19). Lymphocytes are the main immune cells that kill tumor cells, and their decreased levels indicate a decrease in the body's tumor-suppression ability (20,21). Overall, when systemic immune inflammatory index is increased, the body's ability to kill tumor cells is hindered, while the degree of tumor angiogenesis and tumor cell invasiveness increases, which in turn leads to poor prognosis of patients with malignant tumors. Although there is a lack of studies confirming the value of the systemic immune inflammatory index in assessing patients with gastric cancer treated with neoadjuvant chemotherapy, Fu *et al.* reported that this index was an independent factor influencing overall survival (7). A study in patients with early-stage gastric cancer also demonstrated a significant decrease in overall survival in patients with higher systemic immune inflammatory index scores as compared to those with low scores (81.9% *vs.* 96.2%, P<0.001) (15). Ding *et al.* found that systemic immune-inflammatory index combined with prognostic nutritional index had good value in predicting treatment response and prognosis in patients with locally advanced gastric cancer (sintilimab and XELOX) (21). Similar results were achieved in patients with locally advanced gastric cancer who received neoadjuvant chemotherapy alone (22), supporting this study and affirming the value of the systemic immune-inflammatory index in evaluating neoadjuvant chemotherapy response in patients with gastric cancer. Studies in patients with rectal and pancreatic cancer have also confirmed the value of systemic immune-inflammatory index in predicting the efficacy of neoadjuvant treatment (23,24).

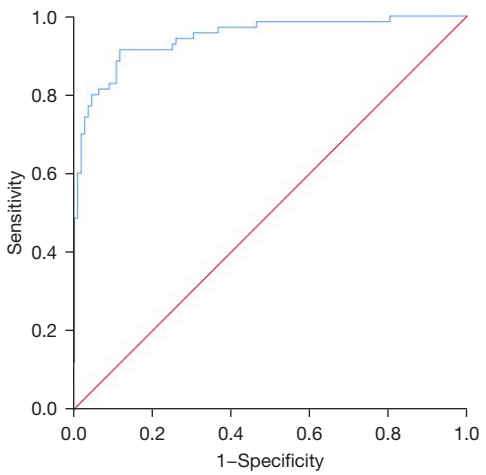

Figure 2 The value of the systemic immune inflammation index in predicting objective remission in patients with gastric cancer treated with neoadjuvant chemotherapy.

Limitations

A major limitation of this retrospective, clinical study is that it did not examine the relationship between the systemic immune inflammation index and prognosis of patients with gastric cancer undergoing neoadjuvant chemotherapy at the

Table 4 Analysis of prognosis for the two groups

Variables	Objective remission group (n=112), n (%)	Control group (n=70), n (%)	χ^2 value	P value
Radical resection	108 (96.43)	60 (85.71)	5.537	0.02
3-year recurrence	52 (46.43)	47 (67.14)	7.450	0.01
3-year metastasis	46 (41.07)	42 (60.00)	5.446	0.02
3-year mortality	23 (20.54)	28 (40.00)	8.091	0.004

molecular level.

Conclusions

The efficacy of neoadjuvant chemotherapy in patients with locally advanced gastric cancer has an important impact on the prognosis, and the systemic immune inflammation index may be a reliable biological indicator of its efficacy.

Acknowledgments

None.

Footnote

Reporting Checklist: The authors have completed the TRIPOD reporting checklist. Available at https://jgo.amegroups.com/article/view/10.21037/jgo-2025-423/rc

Data Sharing Statement: Available at https://jgo.amegroups.com/article/view/10.21037/jgo-2025-423/dss

Peer Review File: Available at https://jgo.amegroups.com/article/view/10.21037/jgo-2025-423/prf

Funding: This work was supported by Zhejiang Pharmaceutical Society Project (No. 2021ZYY24).

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://jgo.amegroups.com/article/view/10.21037/jgo-2025-423/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki and its subsequent amendments. This study was approved by the Ethics Committee of Yangxin County People's Hospital (No. 202301281). The requirement for individual consent was waived due to the retrospective nature of the analysis. The Fifth Hospital of Shijiazhuang Hebei Province was informed and agreed with this study.

References

1. Siegel RL, Kratzer TB, Giaquinto AN, et al. Cancer statistics, 2025. CA Cancer J Clin 2025;75:10-45.
2. Zhan Z, Chen B, Xu S, et al. Neoadjuvant chemotherapy combined with antiangiogenic therapy and immune checkpoint inhibitors for the treatment of locally advanced gastric cancer: a real - world retrospective cohort study. Front Immunol 2025;16:1518217.
3. Yin B, Luo W. Efficacy and safety of neoadjuvant bevacizumab plus chemotherapy in locally advanced gastric cancer patients: a retrospective, comparative study. World J Surg Oncol 2025;23:26.
4. Choucair K, Nebhan C, Cortellini A, et al. Characterization of Age-Associated, Neutrophil-to-Lymphocyte Ratio (NLR) and Systemic Immune-Inflammatory Index (SII) as Biomarkers of Inflammation in Geriatric Patients with Cancer Treated with Immune Checkpoint Inhibitors: Impact on Efficacy and Survival. Cancers (Basel) 2023;15:5052.
5. Lei H, Xu S, Mao X, et al. Systemic Immune-Inflammatory Index as a Predictor of Lymph Node Metastasis in Endometrial Cancer. J Inflamm Res 2021;14:7131-42.
6. Coutu BG, Johnson KC, Bhirud A, et al. Systemic Immune-Inflammatory Index Association with Survival in Patients Undergoing Trimodality Therapy for Lung Cancer. Oncology 2022;100:247-56.
7. Fu S, Yan J, Tan Y, et al. Prognostic value of systemic immune-inflammatory index in survival outcome in gastric cancer: a meta-analysis. J Gastrointest Oncol 2021;12:344-54.
8. Murthy P, Zenati MS, Al Abbas AI, et al. Prognostic Value of the Systemic Immune-Inflammation Index (SII) After Neoadjuvant Therapy for Patients with Resected Pancreatic Cancer. Ann Surg Oncol 2020;27:898-906.
9. Ajani JA, D'Amico TA, Bentrem DJ, et al. Gastric Cancer, Version 2.2022, NCCN Clinical Practice Guidelines in Oncology. J Natl Compr Canc Netw 2022;20:167-92.
10. Gao P, Xiao Q, Tan H, et al. Interpretable multi-modal artificial intelligence model for predicting gastric cancer response to neoadjuvant chemotherapy. Cell Rep Med

2024;5:101848.
11. Tanaka T, Suda K, Nakauchi M, et al. Safety and feasibility of laparoscopic stomach-partitioning gastrojejunostomy combined with neoadjuvant chemotherapy followed by minimally invasive gastrectomy for resectable gastric cancer with gastric outlet obstruction. Surg Endosc 2025;39:837-49.
12. Zhong H, Wang T, Hou M, et al. Deep Learning Radiomics Nomogram Based on Enhanced CT to Predict the Response of Metastatic Lymph Nodes to Neoadjuvant Chemotherapy in Locally Advanced Gastric Cancer. Ann Surg Oncol 2024;31:421-32.
13. Zhong H, Wang T, Liu X, et al. ASO Author Reflections: Deep-Learning Radiomics Nomogram Based on Enhanced CT to Predict the Effect of Neoadjuvant Chemotherapy on Metastatic Lymph Nodes in Locally Advanced Gastric Cancer. Ann Surg Oncol 2024;31:454-5.
14. Xu W, Wang L, Liu W, et al. The efficacy of neoadjuvant chemotherapy is different for type 4 and large type 3 gastric cancer. Am J Surg 2024;228:273-8.
15. Jing Y, Ren M, Li X, et al. The Effect of Systemic Immune-Inflammatory Index (SII) and Prognostic Nutritional Index (PNI) in Early Gastric Cancer. J Inflamm Res 2024;17:10273-87.
16. Yang S, Liang J, Wang X, et al. Neutrophil extracellular traps-related lncRNAs prognostic signature for gastric cancer and immune infiltration: potential biomarkers for predicting overall survival and clinical therapy. Discov Oncol 2024;15:291.
17. Liu J, Sun R, Cai K, et al. A nomogram combining neutrophil to lymphocyte ratio (NLR) and prognostic nutritional index (PNI) to predict distant metastasis in gastric cancer. Sci Rep 2024;14:15391.
18. Hou S, Song D, Zang Y, et al. Prognostic relevance of platelet lymphocyte ratio (PLR) in gastric cancer patients receiving immune checkpoint inhibitors: a systematic review and meta-analysis. Front Oncol 2024;14:1367990.
19. Ma X, Lu X, Jiang X, et al. A nomogram combining prognostic nutritional index and platelet lymphocyte ratio predicts postoperative pulmonary infection following D2 radical gastrectomy for gastric cancer. Nutr Hosp 2024;41:602-11.
20. Xiao H, Zhang P, Zhang S, et al. Peripheral T Lymphocyte Predicts the Prognosis of Gastric Cancer Patients Undergoing Radical Gastrectomy: A Multicenter Retrospective Cohort Study. J Inflamm Res 2024;17:10599-612.
21. Ding P, Guo H, Sun C, et al. Combined systemic immune-inflammatory index (SII) and prognostic nutritional index (PNI) predicts chemotherapy response and prognosis in locally advanced gastric cancer patients receiving neoadjuvant chemotherapy with PD-1 antibody sintilimab and XELOX: a prospective study. BMC Gastroenterol 2022;22:121.
22. Ding P, Yang J, Wu J, et al. Combined systemic inflammatory immune index and prognostic nutrition index as chemosensitivity and prognostic markers for locally advanced gastric cancer receiving neoadjuvant chemotherapy: a retrospective study. BMC Cancer 2024;24:1014.
23. Eraslan E, Adas YG, Yildiz F, et al. Systemic Immune-inflammation Index (SII) Predicts Pathological Complete Response to Neoadjuvant Chemoradiotherapy in Locally Advanced Rectal Cancer. J Coll Physicians Surg Pak 2021;31:399-404.
24. Murthy P, Boone BA. ASO Author Reflections: Systemic Immune-Inflammation Index (SII) as a Biomarker of Response to Neoadjuvant Therapy in Patients with Pancreatic Adenocarcinoma. Ann Surg Oncol 2020;27:907-8.

Cite this article as: Yang L, Chen M, Wang W, Meng M, Wu F, Lv J, Sahu A, Jiao Y. Value of the systemic immune inflammation index in predicting the efficacy of neoadjuvant chemotherapy in patients with gastric cancer: a multicenter retrospective clinical study. J Gastrointest Oncol 2025;16(4):1434-1442. doi: 10.21037/jgo-2025-423