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The primary aim of *World Journal of Gastrointestinal Surgery* (*WJGS*, *World J Gastrointest Surg*) is to provide scholars and readers from various fields of gastrointestinal surgery with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJGS mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal surgery and covering a wide range of topics including biliary tract surgical procedures, biliopancreatic diversion, colectomy, esophagectomy, esophagostomy, pancreas transplantation, and pancreatectomy, *etc.*

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Immunotherapy in gastric cancer with liver metastasis: Challenges and opportunities

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Abstract

In this editorial, we review the article by Liu *et al* published in the *World Journal of Gastrointestinal Surgery* investigating the efficacy and safety of immunotherapy in patients with gastric cancer (GC) and liver metastasis. GC, the fifth most commonly diagnosed malignancy worldwide, presents a significant challenge due to its multifactorial etiology and a grim prognosis for unresectable or recurrent cases. The advent of immune checkpoint inhibitors (ICIs) has revolutionized oncology; yet liver metastasis has been associated with reduced response rates, progression-free survival, and overall survival in various malignancies. The CheckMate-649 and KEYNOTE-859 trials demonstrated promising results with ICIs in advanced GC, particularly in patients with liver metastasis. However, a meta-analysis of liver metastatic solid tumors revealed worse outcomes with ICIs, highlighting the need for further investigation. While combined therapies, including ICIs with local treatments, show promise in improving outcomes, the nuanced landscape of ICIs in liver metastatic GC necessitates continued research for robust conclusions. The current contradictions in the literature underscore the importance of cautious interpretation and the exploration of tailored approaches to enhance clinical efficacy in this challenging patient population.

Key Words: Gastric cancer; Liver metastasis; Immunotherapy; Immune checkpoint inhibitors; Transarterial chemoembolization; Tumor microenvironment

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Core Tip: In the context of gastric cancer patients with liver metastases, the standard treatment often involves combinations of immunotherapy and chemotherapy, particularly in specific patient groups. However, considering the intricate dynamics of the tumor microenvironment, the effectiveness of immunotherapies may be limited in cases of liver metastatic disease. In this context, especially considering the potential benefits of locally targeted treatments to the liver, further research and clinical studies are necessary to expand effective therapeutic options.

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INTRODUCTION

Gastric cancer (GC) is the fifth most commonly diagnosed malignancy globally and ranks as the fourth leading cause of cancer-related deaths, making it a prominent digestive system malignancy[1]. The multifactorial nature of GC development involves *Helicobacter pylori* infection as a significant pathogenic factor, alongside other risk factors such as smoking, alcohol, poor nutrition, age, sex, and race[2,3]. Unfortunately, the prognosis for patients diagnosed with unresectable or recurrent GC is grim, with a median overall survival (OS) of approximately 12-15 months[4,5].

Immune checkpoint inhibitors (ICIs) have revolutionized oncology, showing success in various tumors. However, studies indicate that liver metastasis reduces response rates, progression-free survival (PFS), and OS in malignancies when ICIs are used[6-9]. Despite the accumulating clinical evidence, uncertainty about how liver metastasis modulates the systemic antitumor immune response persists, and the underlying pathophysiological reasons for ICI resistance in these patients remain unclear. Previous studies in melanoma patients revealed that the presence of liver metastases is associated with decreased expression of activation and functional markers of CD8+ tumor-infiltrating lymphocytes during pre-ICI treatment cutaneous tumor biopsies, suggesting that liver-specific tolerance mechanisms may suppress systemic antitumor T-cell immunity[10,11].

In patients with metastatic disease, nonregional lymph nodes are the most common sites of metastasis in GC, with the liver being the most common target organ for hematogenous metastasis[12]. Due to the high incidence of liver metastasis in advanced GC patients, the prognosis is poor, with a five-year survival rate of < 10%[13]. Previously, the first-line systemic treatment regimen for metastatic GC consisted of dual chemotherapy (platinum and fluoropyrimidine) with trastuzumab in cases of HER2 overexpression.

The CheckMate-649 trial, a phase III study, randomized treatment-naïve patients with advanced or metastatic gastroesophageal adenocarcinoma to receive either nivolumab plus chemotherapy ($n = 473$) or chemotherapy alone ($n = 482$) [14]. The 3-year results indicated that in patients with a tumor PD-L1 combined positive score (CPS) ≥ 5 , the combination of nivolumab and chemotherapy resulted in continued improvement in OS, PFS, and overall response rate compared to chemotherapy alone. This supports the ongoing use of nivolumab plus chemotherapy as the standard first-line treatment, providing significant long-term survival benefits. Subgroup analysis demonstrated a statistically significant improvement in median OS for patients with liver metastasis [hazard ratio (HR): 0.72, 95% confidence interval (95%CI): 0.60-0.85] and those without liver metastasis (HR: 0.84, 95%CI: 0.73-0.97). Similarly, the KEYNOTE-859 trial, a phase III study involving untreated patients with HER2-negative gastric or gastroesophageal junction adenocarcinoma, randomized participants to receive pembrolizumab plus chemotherapy ($n = 790$) or placebo plus chemotherapy ($n = 789$) [15]. The pembrolizumab plus chemotherapy group showed a significant improvement in OS with manageable toxicity, particularly in patients with liver metastasis (HR: 0.83, 95%CI: 0.70-0.99) and those without liver metastasis (HR: 0.73, 95%CI: 0.63-0.84).

A meta-analysis of 163 studies involving patients with liver metastatic solid tumors treated with ICIs revealed worse OS (HR: 1.82, 95%CI: 1.59-2.08) and PFS (HR: 1.68, 95%CI: 1.49-1.89) for individuals with liver metastasis compared to those without[16]. The impact of liver metastasis on ICI efficacy varied across tumor types, with the poorest prognosis observed in patients with urinary system tumors (HR: 2.47, 95%CI: 1.76-3.45; and HR: 2.37, 95%CI: 2.03-2.76, renal cell carcinoma and urothelial carcinoma, respectively), followed by melanoma (HR: 2.04, 95%CI: 1.68-2.49) and non-small cell lung cancer (HR: 1.81, 95%CI: 1.72-1.91). Digestive system tumors, including colorectal cancer (HR: 1.35, 95%CI: 1.07-1.71) and gastric/esophagogastric cancer (HR: 1.17, 95%CI: 0.90-1.52), were less affected. In a retrospective study by Liu *et al* [17], which is the focus of this editorial, 48 patients were included, 20 of whom had liver metastases. The objective response rates were 15.0% and 35.7% in the metastatic and nonmetastatic cohorts, respectively ($P > 0.05$). Similarly, disease control rates in these cohorts were 65.0% and 82.1%, respectively ($P > 0.05$). The median PFS was 5.0 months in the liver metastasis group compared to 11.2 months in the nonmetastatic group, and the median OS was 12.0 months in the liver metastasis group and 19.0 months in the nonmetastatic group. This study suggests that immunotherapy may be less effective in GC patients with liver metastases, but diverse results in the current literature emphasize the need for more extensive studies with homogeneous patient groups to draw definitive conclusions.

Targeted therapy and/or chemotherapy with immunotherapy, along with palliative radiotherapy, contribute to improved survival outcomes in patients with liver metastatic GC, with promising synergistic effects reported[18]. Following the development of new antitumor drugs, therapeutic efficacy against tumors has significantly increased. The stimulation of tumor angiogenesis accompanies tumor progression and metastasis. Antiangiogenesis therapy can inhibit tumor an-

giogenesis, reducing tumor growth and metastasis. Targeting angiogenesis by inhibiting vascular endothelial growth factors (VEGFs) has shown significant therapeutic effects in lung, hepatic, renal, gastric, and colon cancers[19,20]. Initiating an immune response requires antigen-presenting cells to acquire and process tumor antigens. Tumors such as hepatocellular carcinoma (HCC) lack sufficient lymphocyte infiltration in both the tumor and the surrounding microenvironment, making it challenging to generate an effective antitumor immune response. Local treatments, such as transarterial chemoembolization (TACE), induce tumor necrosis, exposing a large amount of tumor antigen and initiating the immune response cycle[21,22]. In a study involving patients diagnosed with unresectable HCC, the combination of lenvatinib (anti-VEGF) and PD-1 inhibitors after drug-eluting bead TACE (DEB-TACE) resulted in higher objective response rates and surgical conversion rates[23].

CLINICAL IMPLICATIONS

Due to conflicting data in the literature, a definitive conclusion regarding the effectiveness of ICIs in liver metastatic GC cannot be reached at present. The existing contradictions in the literature underscore the need for further investigation and a cautious interpretation of available data.

Considering the unfavorable prognosis associated with liver metastasis, the exploration of combined therapies becomes paramount. Strategies such as combining ICIs with local treatments can be pivotal in optimizing outcomes for these patients. By doing so, we may unlock avenues to overcome the potential limitations posed by liver metastasis and enhance the overall effectiveness of immunotherapeutic interventions in managing advanced GC. Developing tailored and integrated approaches is promising in improving clinical outcomes in this challenging patient population.

CONCLUSION

The effectiveness of ICIs in liver metastatic GC remains unclear, with conflicting data in the current literature. The challenging prognosis necessitates the exploration of combined therapies, like integrating ICIs with local treatments, to enhance outcomes for these patients. Research focusing on specific approaches is crucial to overcome the complexities of advanced GC with liver metastases and improve overall clinical efficacy.

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REFERENCES

- 1 **Sung H**, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin* 2021; **71**: 209-249 [PMID: 33538338 DOI: 10.3322/caac.21660]
- 2 **Yoon H**, Kim N. Diagnosis and management of high risk group for gastric cancer. *Gut Liver* 2015; **9**: 5-17 [PMID: 25547086 DOI: 10.5009/gnl14118]
- 3 **Joshi SS**, Badgwell BD. Current treatment and recent progress in gastric cancer. *CA Cancer J Clin* 2021; **71**: 264-279 [PMID: 33592120 DOI: 10.3322/caac.21657]
- 4 **Bang YJ**, Van Cutsem E, Feyereislova A, Chung HC, Shen L, Sawaki A, Lordick F, Ohtsu A, Omuro Y, Satoh T, Aprile G, Kulikov E, Hill J, Lehle M, Rüschoff J, Kang YK; ToGA Trial Investigators. Trastuzumab in combination with chemotherapy versus chemotherapy alone for

- treatment of HER2-positive advanced gastric or gastro-oesophageal junction cancer (ToGA): a phase 3, open-label, randomised controlled trial. *Lancet* 2010; **376**: 687-697 [PMID: 20728210 DOI: 10.1016/S0140-6736(10)61121-X]
- 5 **Cunningham D**, Starling N, Rao S, Iveson T, Nicolson M, Coxon F, Middleton G, Daniel F, Oates J, Norman AR; Upper Gastrointestinal Clinical Studies Group of the National Cancer Research Institute of the United Kingdom. Capecitabine and oxaliplatin for advanced esophagogastric cancer. *N Engl J Med* 2008; **358**: 36-46 [PMID: 18172173 DOI: 10.1056/NEJMoa073149]
 - 6 **Tumeh PC**, Hellmann MD, Hamid O, Tsai KK, Loo KL, Gubens MA, Rosenblum M, Harview CL, Taube JM, Handley N, Khurana N, Nosrati A, Krummel MF, Tucker A, Sosa EV, Sanchez PJ, Banayan N, Osorio JC, Nguyen-Kim DL, Chang J, Shintaku IP, Boasberg PD, Taylor EJ, Munster PN, Algazi AP, Chmielowski B, Dummer R, Grogan TR, Elashoff D, Hwang J, Goldinger SM, Garon EB, Pierce RH, Daud A. Liver Metastasis and Treatment Outcome with Anti-PD-1 Monoclonal Antibody in Patients with Melanoma and NSCLC. *Cancer Immunol Res* 2017; **5**: 417-424 [PMID: 28411193 DOI: 10.1158/2326-6066.CIR-16-0325]
 - 7 **Pires da Silva I**, Lo S, Quek C, Gonzalez M, Carlino MS, Long GV, Menzies AM. Site-specific response patterns, pseudoprogression, and acquired resistance in patients with melanoma treated with ipilimumab combined with anti-PD-1 therapy. *Cancer* 2020; **126**: 86-97 [PMID: 31584722 DOI: 10.1002/encr.32522]
 - 8 **Schmid S**, Diem S, Li Q, Krapf M, Flatz L, Leschka S, Desbiolles L, Klingbiel D, Jochum W, Früh M. Organ-specific response to nivolumab in patients with non-small cell lung cancer (NSCLC). *Cancer Immunol Immunother* 2018; **67**: 1825-1832 [PMID: 30171269 DOI: 10.1007/s00262-018-2239-4]
 - 9 **Bilen MA**, Shabto JM, Martini DJ, Liu Y, Lewis C, Collins H, Akce M, Kissick H, Carthon BC, Shaib WL, Alese OB, Steuer CE, Wu C, Lawson DH, Kudchadkar R, Master VA, El-Rayes B, Ramalingam SS, Owonikoko TK, Harvey RD. Sites of metastasis and association with clinical outcome in advanced stage cancer patients treated with immunotherapy. *BMC Cancer* 2019; **19**: 857 [PMID: 31464611 DOI: 10.1186/s12885-019-6073-7]
 - 10 **Loo K**, Tsai KK, Mahuron K, Liu J, Pauli ML, Sandoval PM, Nosrati A, Lee J, Chen L, Hwang J, Levine LS, Krummel MF, Algazi AP, Pampaloni M, Alvarado MD, Rosenblum MD, Daud AI. Partially exhausted tumor-infiltrating lymphocytes predict response to combination immunotherapy. *JCI Insight* 2017; **2** [PMID: 28724802 DOI: 10.1172/jci.insight.93433]
 - 11 **Daud AI**, Loo K, Pauli ML, Sanchez-Rodriguez R, Sandoval PM, Taravati K, Tsai K, Nosrati A, Nardo L, Alvarado MD, Algazi AP, Pampaloni MH, Lobach IV, Hwang J, Pierce RH, Gratz IK, Krummel MF, Rosenblum MD. Tumor immune profiling predicts response to anti-PD-1 therapy in human melanoma. *J Clin Invest* 2016; **126**: 3447-3452 [PMID: 27525433 DOI: 10.1172/JCI87324]
 - 12 **Verstegen MH**, Harker M, van de Water C, van Dieren J, Hugen N, Nagtegaal ID, Rosman C, van der Post RS. Metastatic pattern in esophageal and gastric cancer: Influenced by site and histology. *World J Gastroenterol* 2020; **26**: 6037-6046 [PMID: 33132653 DOI: 10.3748/wjg.v26.i39.6037]
 - 13 **Song JC**, Ding XL, Zhang Y, Zhang X, Sun XH. Prospective and prognostic factors for hepatic metastasis of gastric carcinoma: A retrospective analysis. *J Cancer Res Ther* 2019; **15**: 298-304 [PMID: 30964101 DOI: 10.4103/jert.JCRT_576_17]
 - 14 **Janjigian YY**, Ajani JA, Moehler M, Shen L, Garrido M, Gallardo C, Wyrwicz L, Yamaguchi K, Cleary JM, Elimova E, Karamouzis M, Bruges R, Skoczylas T, Bragagnoli A, Liu T, Tehfe M, Zander T, Kowalyszyn R, Pazo-Cid R, Schenker M, Feeny K, Wang R, Lei M, Chen C, Nathani R, Shitara K. First-Line Nivolumab Plus Chemotherapy for Advanced Gastric, Gastroesophageal Junction, and Esophageal Adenocarcinoma: 3-Year Follow-Up of the Phase III CheckMate 649 Trial. *J Clin Oncol* 2024; JCO2301601 [PMID: 38382001 DOI: 10.1200/JCO.23.01601]
 - 15 **Rha SY**, Oh DY, Yañez P, Bai Y, Ryu MH, Lee J, Rivera F, Alves GV, Garrido M, Shiu KK, Fernández MG, Li J, Lowery MA, Çil T, Cruz FM, Qin S, Luo S, Pan H, Wainberg ZA, Yin L, Bordia S, Bhagia P, Wyrwicz LS; KEYNOTE-859 investigators. Pembrolizumab plus chemotherapy versus placebo plus chemotherapy for HER2-negative advanced gastric cancer (KEYNOTE-859): a multicentre, randomised, double-blind, phase 3 trial. *Lancet Oncol* 2023; **24**: 1181-1195 [PMID: 37875143 DOI: 10.1016/S1470-2045(23)00515-6]
 - 16 **Tian BW**, Han CL, Wang HC, Yan LJ, Ding ZN, Liu H, Mao XC, Tian JC, Xue JS, Yang LS, Tan SY, Dong ZR, Yan YC, Wang DX, Li T. Effect of liver metastasis on the efficacy of immune checkpoint inhibitors in cancer patients: a systemic review and meta-analysis. *Clin Exp Metastasis* 2023; **40**: 255-287 [PMID: 37308706 DOI: 10.1007/s10585-023-10217-7]
 - 17 **Liu K**, Wu CX, Liang H, Wang T, Zhang JY, Wang XT. Analysis of the impact of immunotherapy efficacy and safety in patients with gastric cancer and liver metastasis. *World J Gastrointest Surg* 2024; **16**: 700-709 [PMID: 38577087 DOI: 10.4240/wjgs.v16.i3.700]
 - 18 **Kong Y**, Zhao X, Xu M, Pan J, Ma Y, Zou L, Peng Q, Zhang J, Su C, Xu Z, Zhou W, Peng Y, Yang J, Zhou C, Li Y, Guo Q, Chen G, Wu H, Xing P, Zhang L. PD-1 Inhibitor Combined With Radiotherapy and GM-CSF (PRAg) in Patients With Metastatic Solid Tumors: An Open-Label Phase II Study. *Front Immunol* 2022; **13**: 952066 [PMID: 35874780 DOI: 10.3389/fimmu.2022.952066]
 - 19 **Tanigawa N**, Amaya H, Matsumura M, Shimomatsuya T. Correlation between expression of vascular endothelial growth factor and tumor vascularity, and patient outcome in human gastric carcinoma. *J Clin Oncol* 1997; **15**: 826-832 [PMID: 9053510 DOI: 10.1200/JCO.1997.15.2.826]
 - 20 **Folkman J**. Angiogenesis in cancer, vascular, rheumatoid and other disease. *Nat Med* 1995; **1**: 27-31 [PMID: 7584949 DOI: 10.1038/nm0195-27]
 - 21 **Ochoa de Olza M**, Navarro Rodrigo B, Zimmermann S, Coukos G. Turning up the heat on non-immunoreactive tumours: opportunities for clinical development. *Lancet Oncol* 2020; **21**: e419-e430 [PMID: 32888471 DOI: 10.1016/S1470-2045(20)30234-5]
 - 22 **Rizvi S**, Wang J, El-Khoueiry AB. Liver Cancer Immunity. *Hepatology* 2021; **73** Suppl 1: 86-103 [PMID: 32516437 DOI: 10.1002/hep.31416]
 - 23 **Wu SJ**, Ruan DD, Wu QY, Tang Y, Zhang JH, Cai SL, Zhou YF, Luo JW, Fang ZT. Safety and Efficacy of Drug-Eluting Bead Transarterial Chemoembolization Combined with Lenvatinib and Anti-PD-1 Antibodies for Unresectable Hepatocellular Carcinoma: A Retrospective Analysis. *J Hepatocell Carcinoma* 2023; **10**: 807-820 [PMID: 37292114 DOI: 10.2147/JHC.S408819]



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