Title: Tumor-Infiltrating Lymphocytes (TILs) Immunotherapy for Metastatic Gastrointestinal Cancers: A Narrative Review

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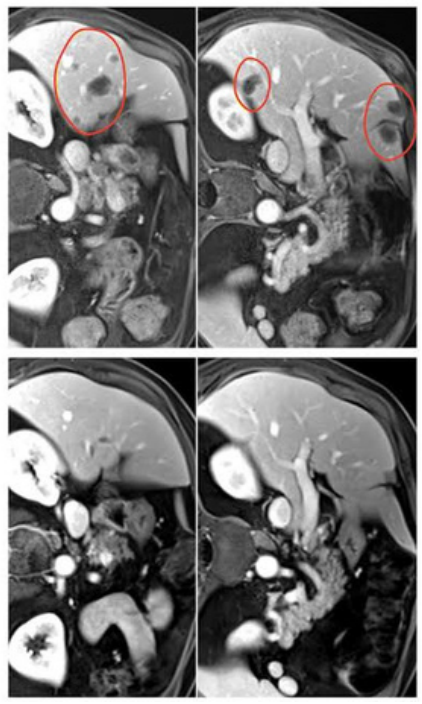
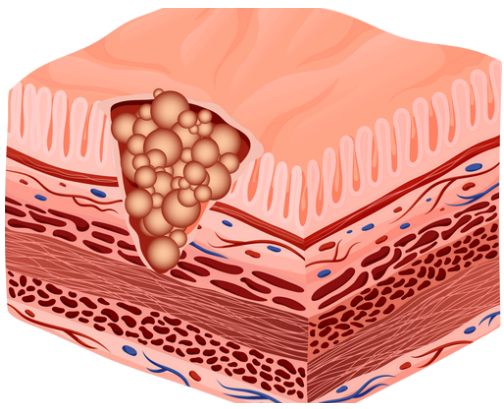
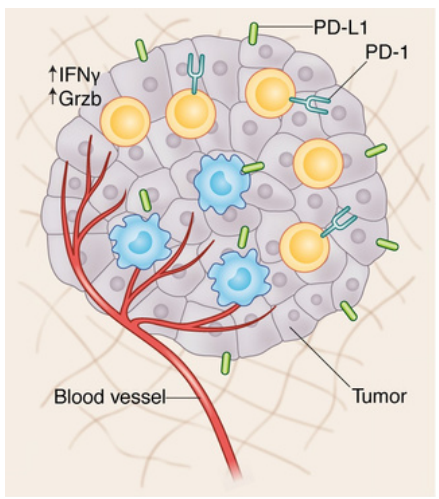
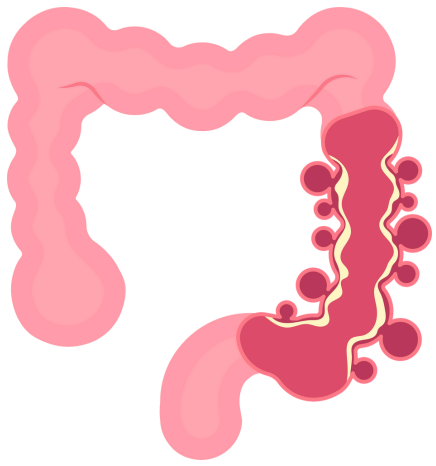
BACKGROUND

Metastatic gastrointestinal (GI) cancers, including colorectal and gastric cancers, have limited treatment options and poor prognosis. Immunotherapy using tumor-infiltrating lymphocytes (TILs) is emerging as a promising approach. This narrative review explores TIL therapy's potential in metastatic GI cancers, focusing on mechanisms and clinical progress.









METHODOLOGY

We reviewed studies from 2020–2025 via PubMed, ESMO, and clinical trial registries, focusing on TIL isolation, expansion, and therapeutic outcomes. Key areas include TIL synergy with checkpoint inhibitors, tumor mutational burden (TMB), and microenvironmental factors.

RESULTS

TIL therapy involves extracting T cells from tumors, expanding them ex vivo, and reinfusing them to target cancer cells. A 2024 phase II trial in metastatic colorectal cancer reported a 35% objective response rate with TILs plus anti-PD-1 therapy, particularly in high-TMB tumors. In gastric cancer, TILs targeting neoantigens achieved durable responses in 20% of patients. The GI tumor microenvironment, rich in immunosuppressive cells, poses challenges, but IL-2 co-administration enhances TIL efficacy. Adverse events, including cytokine release syndrome, occur in 15% of patients, necessitating optimized protocols. Ongoing trials are exploring TIL combinations with KRAS inhibitors.

CONCLUSION

TIL therapy offers a personalized approach for metastatic GI cancers, with early success in high-TMB subsets. Future research should focus on overcoming microenvironmental barriers and scaling TIL production. This review outlines a path for integrating TILs into GI cancer treatment paradigms.