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EDITORIAL

Prognostic impact of preoperative nutritional and immune inflammatory parameters on liver cancer

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Abstract

The immune response to tissue damage or infection involves inflammation, a multifaceted biological process distinguished by immune cell activation, mediator secretion, and immune cell recruitment to the site of injury. Several blood-based immune-inflammatory biomarkers with prognostic significance in malignancies have been identified. In this issue of the *World Journal of Gastrointestinal Surgery*, they examined the prognosis of liver cancer radical resection in relation to preoperative systemic immune-inflammation and nutritional risk indices. Comparing older and younger individuals often reveals compromised nutritional and immunological statuses in the former. Therefore, performing preoperative evaluations of the nutritional status and immunity in geriatric patients is critical. In addition to being a primary treatment modality, radical resection is associated with a significant mortality rate following surgery. Insufficient dietary consump-tion and an elevated metabolic rate within tumor cells contribute to the increased probability of malnutrition associated with the ailment, consequently leading to a substantial deterioration in prognosis. Recent studies, reinforce the importance of nutritional and immune-inflammatory biomarkers. Prior to surgical intervention, geriatric nutritional risk and systemic immune-inflammatory indices should be prioritized, particularly in older patients with malignant diseases.

Key Words: Systemic immune inflammation index; Nutritional risk index; Radical resection; Liver cancer; Prognosis; Correlation

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Core Tip: In this issue of the *World Journal of Gastrointestinal Surgery*, they examined the prognosis of liver cancer radical resection in relation to the preoperative systemic immune-inflammation and geriatric nutritional risk indices. They provided further evidence for the significance of nutritional and immune-inflammatory biomarkers in patients undergoing hepatocellular carcinoma treatment.

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INTRODUCTION

The immune response to tissue damage or infection involves inflammation, a multifaceted biological process distinguished by immune cell activation, mediator secretion, and immune cell recruitment to the site of injury[1,2]. Chronic inflammation is characterized by sustained tissue damage, damage-induced cellular proliferation, prolonged infiltration of mononuclear immune cells, and tissue repair[3,4]. In addition to originating from sites of chronic inflammation, solid tumors can generate an inflammatory microenvironment[5]. Chronic inflammation has been associated with the development and progression of cancer, affecting various cellular processes, including invasion, metastasis, promotion, survival, proliferation, and angiogenesis[4,6]. Notably, increased levels of C-reactive protein in the bloodstream-an indicator of inflammation-have been associated with unfavorable prognoses in non-small cell lung, endometrial, cervical, colorectal, and breast cancer[7-10].

Recently, several blood-based immune-inflammatory biomarkers with prognostic significance in malignancies have been identified[11-14]. In patients with liver cancer, for instance, high neutrophil-to-lymphocyte ratios, high platelet-to-lymphocyte ratios, and low lymphocyte-to-monocyte ratios have been associated with unfavorable oncological outcomes [15-17]. The systemic immune-inflammatory index value is determined by among blood-based immune-inflammatory biomarkers, including neutrophils, platelets, and lymphocytes. Numerous studies have demonstrated that a heightened preoperative systemic immune-inflammatory index in patients with malignant diseases has a prognostic significance for oncologic outcomes[18-20]. Furthermore, the ratio of gamma-glutamyl transpeptidase to platelets has emerged as a prominent focus in liver cancer research[21]. In this issue of the *World Journal of Gastrointestinal Surgery*, Li *et al*[22] highlighted the prognosis of radical resection of liver cancer in relation to the nutritional risk and preoperative systemic immune-inflammation indices.

Recently, the number of older patients undergoing cancer surgery has increased. In contrast to younger individuals, older individuals frequently experience compromised nutritional and immunological statuses. Therefore, preoperative assessment of nutrition and immunity is important in older patients. Cachexia induced by cancer is a clinical condition that leads to skeletal muscle atrophy and affects as many as 80% of patients with advanced cancer[23]. Additionally, an inflammatory response mediated by inflammatory cytokines induces protein catabolism and inhibits muscle synthesis, ultimately resulting in the atrophy of skeletal muscle[24,25]. Elevated levels of inflammatory cytokines have been shown to exhibit a negative correlation with both muscle strength and hypertrophy[26]. Therefore, geriatric nutritional assessment, such as geriatric nutritional risk index before surgery and recovery of nutritional deficiency through appropriate rehabilitation exercises and nutritional support, may improve the patient's clinical and oncologic outcomes following surgery.

CONCLUSION

In addition to being a primary treatment modality, radical resection is associated with a significant mortality rate following surgery. Inadequate nutritional intake and a heightened metabolic rate in tumor cells further increase the likelihood of malnutrition associated with the disease, thereby substantially diminishing prognosis. Additionally, as surgical techniques and strategies for nutritional support have advanced, the number of cases of surgery in older individuals with liver cancer is increasing. Recent publications, including a study by Li *et al*[22], provided further evidence for the importance of nutritional and immune-inflammatory biomarkers. Particularly for older patients with malignant diseases, the geriatric nutritional risk and systemic immune-inflammatory indices should be prioritized prior to surgery.

FOOTNOTES

Author contributions: Bae SU designed research; Bae SU performed research; Bae SU analyzed data; Bae SU wrote the letter; and Bae SU revised the letter.

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