Diet Influences Survival After Stage III Colon Cancer

A Dana-Farber study shows that an anti-inflammatory diet could extend overall survival after treatment for Stage III colon cancer.

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Patients with colon cancer who consumed an anti-inflammatory diet during a Phase III clinical trial showed longer overall survival post-treatment compared to those on a proinflammatory diet, according to a Dana-Farber Cancer Institute analysis. Engaging in higher levels of physical activity may amplify the positive influence on survival.

“One of the most common questions that patients ask is what they should do after treatment to maximally reduce their risk of cancer recurrence and improve survival,” says first author Dr. Sara Char, a clinical fellow in Hematology and Oncology at Dana-Farber Cancer Institute. “These findings add to the published literature about the importance of dietary patterns and physical activity in outcomes of patients with colorectal cancer.”

Char is [presented] the study at the 2025 American Society of Clinical Oncology Annual Meeting in Chicago on June 1. Dr. Kimmie Ng, associate chief of the Division of Gastrointestinal Oncology, and Chen Yuan, Sc.D., both of Dana-Farber, are co-senior authors.

Approximately 150,000 individuals are diagnosed with colorectal cancer each year in the United States. It is the third most diagnosed cancer globally and the second-leading cause of cancer-related death. The median five-year survival for patients with Stage III colon cancer is around 80 percent, though 25% to 35% of patients experience a recurrence of cancer during that time.

“This study provides additional evidence that diet may be important for improving outcomes and survival in patients with Stage III colon cancer,” says Ng. “Further studies are needed to tailor specific dietary recommendations for patients with colon cancer, and to understand the biological mechanisms underlying the relationship between proinflammatory diets and survival.”

The CALGB/SWOG 80702 (Alliance) trial was initiated in 2010 and aimed to reduce the risk of cancer recurrence among patients with Stage III colon cancer. Patients in the trial were treated with surgery followed by either threeor six months of chemotherapy, with or without celecoxib, an anti-inflammatory drug. They also had the option to complete dietary and lifestyle questionnaires. Of 2,526 patients enrolled in the trial, 1,625 were eligible for this study after completing food

frequency and physical activity questionnaires.

Using responses to food frequency questionnaires, Char and colleagues calculated an empirical dietary inflammatory pattern (EDIP) score, a validated tool to approximate how inflammatory a given diet is, for each patient. A proinflammatory diet includes higher amounts of red meat, processed meats, refined grains, and sugar-sweetened beverages, while an anti-inflammatory diet frequently includes coffee, tea, and a variety of vegetables, including leafy greens.

“A proinflammatory diet would be enriched with these proinflammatory food groups whereas a less inflammatory diet might be enriched with more of the anti-inflammatory food groups,” says Char.

The investigators ranked diets from the most proinflammatory to the least and assessed overall survival outcomes after following patients for many years. They found that patients consuming the most proinflammatory diets (in the top 20% of the ranking) had an 87 percent higher risk of death than those consuming the least proinflammatory diets (in the bottom 20%).

Previous research showed that systemic inflammation can increase the risk of colon cancer development and progression. Further, randomized clinical trials have shown that the use of anti-inflammatory medications can decrease the risk of cancer recurrence in selected patients with Stage III colon cancer. This study adds to research suggesting that diet may also influence cancer outcomes after treatment.

This clinical trial also collected information about physical activity, assessing the average weekly intensity of activity. Patients considered to have a high level of physical activity reported the equivalent of regularly walking at a 2-3 mile per hour pace for one hour approximately three times a week or more.

In the study, patients who consumed more anti-inflammatory diets and engaged in higher levels of physical activity had the best overall survival outcomes, with 63% lower risk of death compared to patients who consumed the most proinflammatory diets and engaged in lower levels of physical activity.

Because patients in the trial were randomized to receive chemotherapy with or without celecoxib, an anti-inflammatory drug, Char and colleagues investigated the influence of celecoxib use on their analysis. They found that the use of celecoxib did not have a significant influence on the relationship between diet and survival.

Dana-Farber researchers plan more detailed investigations of the biological effects of diet and lifestyle on colon cancer outcomes, including those with metastatic colon cancer and those diagnosed at younger ages, under age 50.

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