Antibiotic Use Linked to Increased Risk of Colon Cancer

Though small, the increased risk prompted researchers to urge more cautious prescribing.

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In the first population-based study to assess such a connection, researchers have identified an association between exposure to antibiotics and an increased risk of colon cancer. They found no such link between antibiotics and rectal cancer.

Publishing their findings in the journal Gut, researchers at the Johns Hopkins Sidney Kimmel Cancer Center analyzed data on more than 11 million individuals in the United Kingdom's Clinical Practice Research Datalink, covering 1989 to 2012.

The study authors identified 28,890 people diagnosed with colon cancer and matched each of them with five healthy controls who did not have the disease according to age, sex and where their general practitioner practiced. This resulted in a control cohort of 137,077 people.

In addition to looking for records of antibiotic use, the investigators assessed individuals' medical charts for factors known to be associated with colon and rectal cancer, including a history of obesity, smoking, alcohol use and diabetes.

Those who had colorectal cancer were more likely than those who did not to have one or more of the risk factors in their medical chart. After adjusting the data to account for those known risk factors, the investigators found that 71% of those who developed colon cancer had taken antibiotics, compared with 69% of those without the cancer.

Exposure to antibiotics was associated with about a 15% increased risk of cancer in the proximal colon, which is the first and middle portions of the colon. But there was no link between antibiotic exposure and cancer in the distal colon, or the last portion of the colon.

The association between antibiotics and colon cancer was particularly strong among individuals who took types of antibiotics that kill anaerobic bacteria, including those in the penicillin class. Antibiotics can alter the balance of the gut microbiome, killing off beneficial bacteria and allowing harmful, possibly carcinogenic, varieties to thrive.

Fifteen to 30 days of total exposure to antibiotics was associated with an 8% increased risk of

colon cancer, while 30 or more days of exposure was associated with a 15% increased risk. As for rectal cancer, greater lengths of exposure to antibiotics, in particular those lasting 60 days or more, were actually associated with a lower risk of this cancer.

There was a minimum lag time of 10 years between antibiotic exposure and its association with the ultimate development of colon cancer.

Addressing the recent popularity of probiotic foods and supplements, which many people use in the hope of addressing imbalances in their gut microbiome, the study authors stress that the research on probiotics is mixed. Some studies have shown they are beneficial, while others have found they have a null effect and still others have found they can be harmful. A better approach to protecting gut health, the study authors offer, is more judicious prescription of antibiotics.

“The primary message of this study is the importance of antibiotic stewardship: not treating common viral infections with antibiotics, using them for the shortest time period possible and using targeted antibiotics rather than broad spectrum ones,” the study’s leader Cynthia L. Sears, MD, a professor of cancer immunotherapy at the Sidney Kimmel Cancer Center. “This research adds to our understanding that these drugs can have significant off-target effects, including the induction of chronic illnesses.”

To read a press release about the study, click here.

To read the study abstract, click here.

To read a Cancer Health feature on cancer and the microbiome, click here.

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