Taller adults may be at increased risk for colorectal cancer

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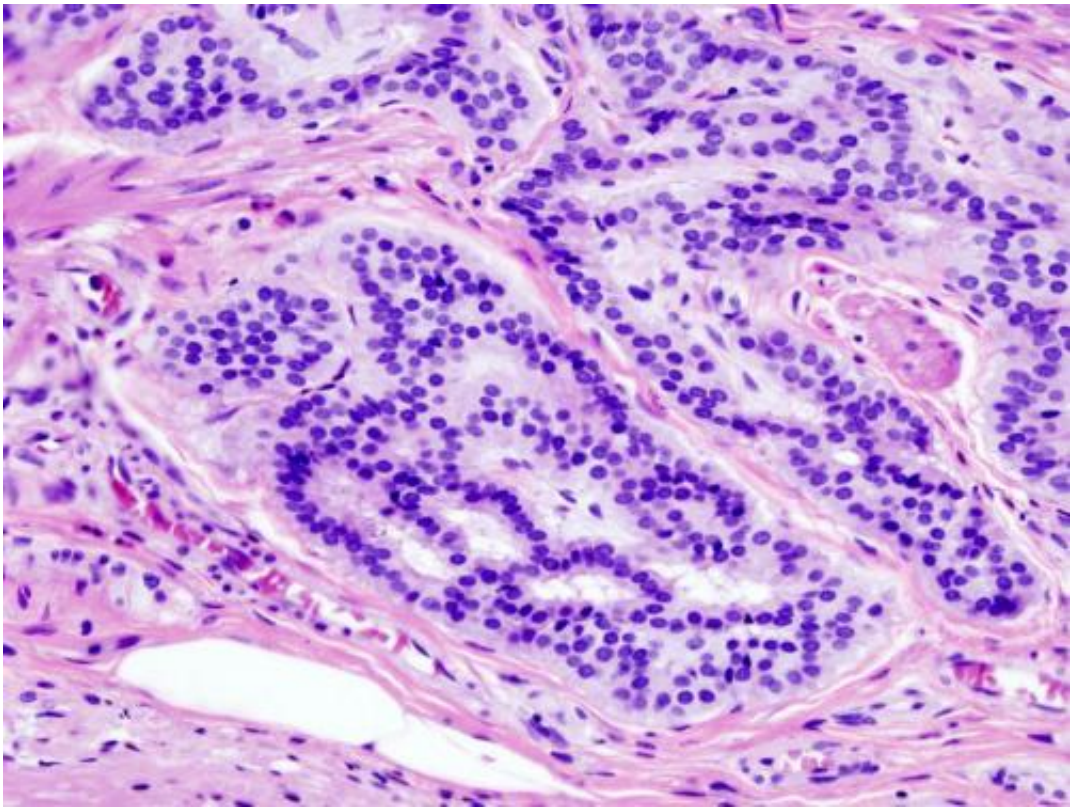

Cancer—Histopathologic image of colonic carcinoid. Credit: Wikipedia/CC BY-SA 3.0

A new meta-analysis, or data examination of several independent studies, by Johns Hopkins Medicine researchers adds to evidence that taller adults may be more likely than shorter ones to develop colorectal cancer or colon polyps that can later become malignant. While the

association between taller height and colorectal cancer has been previously investigated, the Johns Hopkins Medicine researchers say those studies offered conflicting results, carried inconsistent measures of height and failed to include the risk of adenomas, which are precancerous colon polyps.

"This is the largest study of its kind to date. It builds on evidence that taller height is an overlooked risk factor, and should be considered when evaluating and recommending patients for colorectal cancer screenings," says Gerard Mullin, M.D., associate professor in the Division of Gastroenterology and Hepatology at Johns Hopkins Medicine. He and his team cautioned that the study does not prove causal effect, or that taller stature is as dominant a risk factor as age or genetics. However, the Johns Hopkins study strengthens long-observed links between taller stature and colorectal cancer risk.

"One possible reason for this link is that adult height correlates with body organ size. More active proliferation in organs of taller people could increase the possibility of mutations leading to malignant transformation," says Elinor Zhou, M.D., co-first author of the published study report.

The authors of the meta-analysis, published March 2 in *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research, first identified 47 international, observational studies involving 280,660 cases of colorectal cancer and 14,139 cases of colorectal adenoma. They also included original data from the Johns Hopkins Colon Biofilm study, which recruited 1,459 adult patients undergoing outpatient colonoscopies to explore the relationship between cancer and bacteria stuck to the walls of the colon, known as biofilm.

Because the definition of tallness is different around the world, the Johns

Hopkins team compared the highest versus the lowest height percentile of various study groups. "The findings suggest that, overall, the tallest individuals within the highest percentile of height had a 24% higher risk of developing colorectal cancer than the shortest within the lowest percentile. Every 10-centimeter increase (about 4 inches) in height was found to be associated with a 14% increased risk of developing colorectal cancer and 6% increased odds of having adenomas," says Mullin.

According to the U.S. Centers for Disease Control and Prevention, the average height in the U.S. for men is 5 feet, 9 inches, and for women it is 5 feet, 4 inches. This means men who are 6 feet, 1 inch and women who are 5 feet, 8 inches (4 inches/10 centimeters above the average U.S. height) or taller are at a 14% increased risk of colorectal cancer and a 6% increased risk of adenomas.

The percentage results were adjusted for demographic, socioeconomic, behavioral and other known risk factors of colorectal cancer. Those risk factors include so-called non-modifiable factors such as age, a personal or family history of colorectal cancer or adenomas, and a personal history of chronic inflammatory bowel disease. In the U.S., more than half of all colorectal cancers are linked to modifiable lifestyle factors, including unhealthy diet, insufficient physical activity, smoking and high alcohol consumption. Although not directly comparable because of the difference in measurement scale, tallness may impart an order of magnitude of colorectal cancer risk similar to better-known modifiable factors such as cigarette smoking, moderate alcohol consumption and high processed red meat intake. Currently, gastroenterologists focus on genetic and age-related risks for recommending colorectal cancer screenings.

According to the American Cancer Society, colorectal cancer is the third most common cancer diagnosed in both men and women in the United

States. The rate at which people are diagnosed with colorectal cancer each year has dropped overall since the mid-1980s, mainly because of primary prevention such as lifestyle improvement and secondary prevention such as early detection through screening. However, the downward trend is mostly in older adults. Deaths from colorectal cancer among individuals younger than 50 have increased 2% per year from 2007 to 2016 for reasons that are not yet clear.

"Greater awareness by the public and government will help promote more interest and funding for more research, which ultimately could change guidelines for physicians to consider height as a risk for cancer," says Mullin. "There are well-known modifiable dietary associations for colorectal cancer, such as processed red meats and smoking, but guidelines currently are fixated on family history, and height is clinically neglected when it comes to risk screening."

Zhou says more research is needed to define particular taller populations at risk for colon cancer. "For instance, tall athletes and individuals with inherited tallness, such as those with Marfan syndrome, could be screened earlier and the impact of height further explored," she says. "We need more studies before we can definitively say at what height you would need earlier colorectal cancer screening."

More information: Elinor Zhou et al, Adult-Attained Height and Colorectal Cancer Risk: A Cohort Study, Systematic Review and Meta-Analysis, *Cancer Epidemiol Biomarkers Prev* (2022). doi.org/10.1158/1055-9965.EPI-21-0398

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