



Abdominal Adiposity as a Risk Factor for Colorectal Cancer

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Colorectal cancer is the third most commonly diagnosed cancer type with a rising trend worldwide. In recent years, it has become more evident colorectal cancer is associated with obesity, which is also a global health issue. According to the 2020 update by the World Health Organization, worldwide obesity has nearly tripled in the last 45 years. Over one-third of the adults were overweight, and 13% were obese [1]. However, not all obesities are “created” equal. Variation in the adipose deposit within the lower body, upper body, abdominal region, or visceral region is more associated with different pathological conditions [2]. Adipose deposit variation also exhibits sexual dimorphism, which is considered under the influence of estrogens [3]. Waist circumference, waist-to-hip ratio, and waist-to-height ratio have been used to measure body fat distribution [4].

In recent years, researchers have found that abdominal adiposity, as reflected by high waist circumference and waist-to-hip ratio, may be a better predictor of colon cancer risk, but likely not rectal cancer, than overall obesity represented by a high BMI. In 2017, An umbrella review of systematic reviews and meta-analyses [5] showed that adiposity was associated with risk for eleven types of cancers including colon and rectal cancers. Another 2017 study [6] summarized fourteen prospective cohort studies from 1994 to 2015. Although these fourteen studies reported mixed results, the pooled analysis showed an increased risk of total colorectal cancer, colon cancer, and rectal cancer with a greater waist circumference or a higher waist-to-hip ratio. The elevated risk is more significant in men (1.47) than in women (1.30). High heterogeneity across studies was observed for total colorectal cancer and colon cancer, but not for rectal cancer.

Several studies in the past two years continued to show mixed while still intriguing results. One study published in 2019 [7] examined the data from 6,669 women and 10,805 men in Sweden. In men, BMI, waist-to-hip ratio, and waist circumference were the predictors of colon cancer but not rectal cancer. Waist circumference was associated with a 25% increased hazard per standard deviation increment for colon cancer. In contrast, none of these factors was significantly associated with colorectal cancer risk in women. Another study, also published in 2019 [8], examined the data collected from 9,959,605 participants through the Korean National Health Insurance Service. The authors found that waist circumference, independent of BMI, was strongly associated with colorectal, colon, and rectal cancers in both men and women. These associations were more pronounced in subjects aged 65 years or older, in men, and in diabetes patients. In a Mendelian randomization study with 806,810 participants published last month [9], higher BMI was associated with 1.23 times higher colorectal cancer risk in men and 1.09 times higher in women. In contrast to the earlier Swedish study, the waist-to-hip ratio was more strongly associated with colorectal cancer risk in women than men (1.25 vs. 1.05). Consistent with previous studies, higher colorectal cancer risk is more prominent for cancers at the proximal colon than rectal sub-sites.

Overall, recent studies continue to support that colorectal cancer risk is elevated with obesity. Abdominal adiposity, indicated by a larger waist circumference and a higher waist-to-hip ratio, seems to be a more robust indicator. The sex dimorphism is not consistent but may be reconciled with further investigation into genetic, hormonal, and dietary factors. As proposed by some scholars [10], waist circumference and waist-to-hip ratio may be considered as simple factors to optimize the screening procedure for high-risk populations of colon cancer.

Bibliography

1. WHO. "World Health Organization (Who) Obesity and Overweight" (2020).
2. Hill J H., *et al.* "Obesity Associated Disease Risk: The Role of Inherent Differences and Location of Adipose Depots". *Hormone Molecular Biology and Clinical Investigation* 33.2 (2018).
3. Palmer B F and D J Clegg. "The Sexual Dimorphism of Obesity". *Molecular and Cellular Endocrinology* 402 (2015): 113-119.
4. Ashwell M., *et al.* "Waist-to-Height Ratio Is a Better Screening Tool Than Waist Circumference and Bmi for Adult Cardiometabolic Risk Factors: Systematic Review and Meta-Analysis". *Obesity Review* 13.3 (2012): 275-286.
5. Kyrgiou M., *et al.* "Adiposity and Cancer at Major Anatomical Sites: Umbrella Review of the Literature". *BMJ* 356 (2017): j477.
6. Dong Y., *et al.* "Abdominal Obesity and Colorectal Cancer Risk: Systematic Review and Meta-Analysis of Prospective Studies". *Bioscience Report* 37.6 (2017).
7. Andreasson A., *et al.* "The Prediction of Colorectal Cancer Using Anthropometric Measures: A Swedish Population-Based Cohort Study with 22 Years of Follow-Up". *United European Gastroenterology Journal* 7.9 (2019): 1250-1260.
8. Nam G E., *et al.* "Association between Abdominal Obesity and Incident Colorectal Cancer: A Nationwide Cohort Study in Korea". *Cancers (Basel)* 12.6 (2020).
9. Bull C J., *et al.* "Adiposity, Metabolites, and Colorectal Cancer Risk: Mendelian Randomization Study". *BMC Medicine* 18.1 (2020): 396.
10. Tandon K., *et al.* "Body Mass Index and Colon Cancer Screening: The Road Ahead". *World Journal of Gastroenterology* 21.5 (2015): 1371-1376.

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