

Aspirin Use Reduces Colorectal Cancer Risk in Many Subgroups

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A large body of evidence suggests that the use of aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) reduces the risk of colorectal cancer. However, because their use can also lead to side effects such as gastrointestinal bleeding, NSAID use is not recommended for colorectal cancer prevention among the general population. Of great interest for researchers, then, is identifying subgroups of people for whom the benefits of colorectal cancer chemoprevention outweigh the risk of side effects. To identify these groups, Ms. Wendy Wang and Dr. Emily White and colleagues in the Public Health Sciences Division evaluated the association between NSAID use and colorectal cancer risk across a range of subgroups with differing risk factors. In a recent article in *Cancer Epidemiology, Biomarkers, & Prevention*, the authors report that the protective effect was consistent across these various subgroups, suggesting that the beneficial role of NSAIDs on colorectal cancer risk is unmodified by these additional risk factors.

Chronic inflammation is an established risk factor for colorectal cancer, and NSAIDs are thought to lower this risk by inhibiting inflammatory pathways and reducing inflammation. In addition to inflammation, there are a large number of other risk factors that have been associated with colorectal cancer risk. These include factors such as obesity, physical inactivity, smoking, family history, and high consumption of red meat and alcohol. While it is suspected that some of these risk factors might also impact risk by increasing inflammation, their interaction with NSAID use are unclear. If NSAID use were to mitigate the increased risk due to some of these additional factors, then subgroups of people with higher risk could be more appropriately targeted for chemoprevention strategies.

To identify such groups, the authors tested the interaction between NSAID use and these various risk factors on colorectal cancer risk using data from the VITamins and Lifestyle (VITAL) study. This large cohort study of roughly 75,000 western Washington residents provided detailed prospective information on a large range of exposures. Incident colorectal cancer cases were identified through the Surveillance, Epidemiology, and End Results (SEER) cancer registry. Cox regression was used to evaluate the association between NSAID use in the 10 years prior to baseline and development of colorectal cancer during follow-up (average 8.4 years).

Testing across these subgroups, the authors found that any type of NSAID use for at least 4 days a week for at least 4 years was associated with a 42% lower risk of colorectal cancer (p-trend < 0.001). This protective association was consistent among subgroups defined by additional risk factors, with reductions in risk ranging from 32% to 56% within each subgroup (p-trend < 0.05). Though not statistically significant, high NSAID use appeared to have a greater risk reduction among men, participants who were obese, and regular alcohol drinkers. Further evaluations looking at cancer site and cancer stage also suggested that NSAID use was associated with a lower risk of proximal colon cancer compared to distal colon cancer, and distant stage colorectal cancer compared to local stage.

"Our results suggest that use of aspirin or other NSAIDs has a generally beneficial role in colorectal cancer prevention, largely unmodified by other lifestyle factors," said lead author Ms. Wendy Wang. "However, the differential effects by colorectal cancer subsites may indicate potential chemopreventive pathways of NSAID use. Our study, along with previous observational studies, did not have sufficient power to detect small differences in the effects of NSAIDs on colorectal cancer risk between subgroups of the population. Therefore, we aim to replicate this systematic evaluation of effect modifiers between NSAID use and colorectal cancer risk in the Genetic Epidemiology of Colorectal Cancer Consortium (GECCO), a large consortium of cohort and case-control studies for colorectal cancer."

Other PHS researchers contributing to this project were Drs. Ulrike Peters and John Potter.

[Wang X, Peters U, Potter JD, White E](#). 2015. Association of Non-steroidal Anti-inflammatory Drugs with Colorectal Cancer by Subgroups in the VITamins And Lifestyle (VITAL) Study. *Cancer Epidemiol Biomarkers Prev*. pii: cebp.1253.2014. [Epub ahead of print]



Image provided by Ms. Wendy Wang

Generic non-steroidal anti-inflammatory drugs (NSAIDs) are readily accessible over the counter.