

PROJECT FACT SHEET

How Can We Reduce the Risk of Colon Cancer for Colitis Sufferers?

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According to the Crohn's and Colitis Foundation of Canada, an estimated 170,000 Canadian men, women and children suffer from inflammatory bowel disease, a painful inflammation of the intestines. In addition to the immediate suffering experienced by these individuals, patients with chronic inflammation of the colon (colitis) also face a greater risk of colorectal cancer, the third most common cancer for men and women in Canada.

The link between colitis and colorectal cancer raises questions about certain medications used to treat inflammatory bowel disease, medications that while reducing inflammation have an unknown impact on the risk of developing colorectal cancer.

Andrew Stadnyk, a member of the faculty in the Department of Pediatrics and the Department of Microbiology and Immunology at Dalhousie University, and PhD candidate RoseMarie Stillie recently explored this issue. They focused on a molecule, TNF, which mediates the body's defensive inflammatory response. TNF has multiple effects acting through two receptor types. Inhibiting TNF reduces the disease in some Crohn's patients; however, TNF also facilitates the loss of damaged epithelial cells, which is important in preventing carcinoma. The study looked at the relationship between mice lacking either of the receptor types and colitis-mediated colorectal cancer incidence.

Mice deficient in either receptor type, TNFR1 or TNFR2, experienced similar levels of acute colitis as mice possessing both receptor types, using dextran sodium sulphate as the stimulating agent. This is important since a reduction in colitis may indirectly result in less colitis-mediated cancer. Dr. Stadnyk and Ms. Stillie then treated mice with a low dose of epithelial mutagen followed by four episodes of dextran sulphate sodium colitis. Eighty seven percent of normal mice developed colon tumors, as did a similar proportion of mice deficient in TNFR2.

However, significantly fewer of the mice deficient in TNFR1 developed colon cancer (50%). "Thus, in this model the evidence suggests that TNF promotes cancer, and either reducing TNF or blocking the TNFR1 ought to reduce the incidence of cancer in colitis sufferers" says Dr. Stadnyk.

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