

Increased glucose level is a strong risk factor for colorectal cancer

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Diabetes is a very common illness that affects more than 20 million people in the U.S. and it is estimated an additional 54 million Americans have pre-diabetes, a condition that occurs when a person's blood glucose levels are higher than normal but not high enough for a diagnosis of type 2 diabetes. Therefore, it is important to determine whether glucose and insulin levels are associated with a higher risk of colon polyps, the precursor lesions to colon cancer.

According to the results of a study published in *Gastroenterology*, patients with high levels of insulin and glucose are at increased risk of developing recurrent colorectal adenomas, or tumors, with elevated glucose providing the strongest risk factor for recurrence of these lesions.

“This is the first study to determine whether elevated glucose or insulin as measured when or shortly after a patient has had polyps removed during a baseline colonoscopy procedure increases their risk for subsequent recurrence of pre-cancerous growths in the colon,” according to Andrew Flood, PhD, of the University of Minnesota and lead author of the study. “The results of our study have important clinical implications with respect to maintenance of glycemic control in patients with a history of colorectal polyps.”

In particular, study subjects who had even modestly impaired fasting glucose (an early sign of insulin resistance, itself a precursor of diabetes) had an especially large increased risk of recurrence of the types of polyps that are most likely to progress to invasive cancer. Therefore, the clinical management of glycemic control is important in reducing the risk of tumor recurrence and colorectal cancer. The glucose levels observed by researchers in the Polyp Prevention Trial, of which this study was a subset analysis, and the levels of exposure that led to the increased risk, were not unusually elevated. Researchers

used a glucose concentration of 99 mg/dl as the cut point for the patients in the high group in the study; a fasting blood glucose level between 100 and 125 mg/dl signals pre-diabetes. The levels used in the study are reflective of those in the general U.S. population, therefore it is important to note that even a modest elevation of fasting glucose can affect a patient's risk of colorectal cancer.

Patients who presented with the highest levels of both insulin and glucose had an approximately 50 percent increased risk of colorectal tumor recurrence. The Polyp Prevention Trial found a recurrence for colorectal tumors of 39.6 percent over four years, meaning the recurrence rate in this subset of patients represents a large increase in absolute risk. Patients who had a high concentration of glucose experienced more than 2.4 times increased odds of advanced tumor recurrence. The subjects with the highest glucose concentration also tended to be slightly older and have higher body mass index (BMI) and waist to hip ratios. Additionally, they were more likely to be male, current smokers, a member of a minority group and less likely to have advanced beyond a high school education. For those without a family history of colorectal cancer, researchers observed an even greater risk with elevated concentrations of insulin and glucose compared to the overall study population.

More than 1,905 patients from the Polyp Prevention Trial completed the study protocol, of which 375 matched pairs, or 750 patients, were included in this subset analysis. The patients were matched for gender and age within five years among trial participants who had recurrent adenomas and stored serum. The Polyp Prevention Trial was a clinical trial headed by the National Cancer Institute conducted with 2,079 men and women to determine the effect of a low-fat, high-fiber, high fruit/vegetable eating plan on the recurrence of precancerous polyps in the colon and rectum. Every participant had been diagnosed with a polyp

within the previous six months, which was removed at colonoscopy.

Source: American Gastroenterological Association

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