Diets High in Choline May Increase Risk for Colorectal Polyps

Contrary to expectations, diets high in the nutrient choline were associated with an increased risk of some colorectal polyps, which can—but do not always—lead to colorectal cancer, according to a study published online in the August 7 Journal of the National Cancer Institute.

Major food sources of choline include red meat, eggs, poultry, and dairy products. Choline is involved in a biochemical process known as one-carbon metabolism. Studies have shown that people with increased intake of other nutrients required for one-carbon metabolism, such as folate, are at a decreased risk for colorectal polyps. This is the first study to examine the association between choline and colorectal polyps.

Eunyoung Cho, Sc.D., of Brigham and Women’s Hospital in Boston and colleagues sent food-frequency questionnaires to women enrolled in the Nurses’ Health Study every two to four years from 1984 to 2002. They then estimated the choline content in their diets.

The researchers had hypothesized that choline intake would decrease the risk of colorectal polyps like folate does. But the results suggest the opposite—greater amounts of choline in the diet were associated with an elevated risk of colorectal polyps.

“Although our results were contrary to expectation based on choline’s role [in one-carbon metabolism], there is a potential biologic basis for the positive association that we observed…Once a tumor is initiated, growth into a detectable [polyp] depends in part on choline availability because choline is needed to make membranes in all rapidly growing cells,” the authors write. However, because this was the first study of choline and colorectal polyps, and other components of diets high in choline may be responsible for the association, the finding needs to be replicated in other studies.

In an accompanying editorial, Regina Ziegler, Ph.D., and Unhee Lim, Ph.D., of the National Cancer Institute in Bethesda, Md., describe the complexity of the relationship between one-carbon metabolism and the development of cancer.

“Clearly, one-carbon metabolism and its role in [cancer development] is more complicated than originally anticipated, and our understanding of the underlying mechanisms is probably incomplete. More research, and caution in developing public health policy and guidance, is warranted,” the authors write.

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