Re: Prospective Study of Adult Onset Diabetes Mellitus (Type 2) and Risk of Colorectal Cancer in Women

Hu et al. (1) reported a correlation between non–insulin-dependent diabetes mellitus (NIDDM) and colorectal cancer in women. Their article includes a discussion of possible mechanisms by which NIDDM could lead to colorectal cancer. They point out that insulin can function as a growth factor for colonic cancer cells. In addition, they discuss other possible contributing factors, such as elevated levels of fecal bile acid and a longer bowel transit time. Another possible mechanism needs to be considered.

Hyperglycemia initiates a reactive oxygen species (ROS) chain reaction (2). This ROS chain reaction consumes antioxidants, resulting in lower than normal levels of antioxidant activity (3). Impaired antioxidant activity might allow free radicals produced from other sources to go unchecked. This increased oxidative load in NIDDM is associated with increased oxidative damage to DNA (4). Oxidative damage is associated with cancer (5). This process could work in synergy with hyperinsulinemia to increase the risk of cancer in NIDDM. This hypothesis needs further investigation.

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REFERENCES


NOTE

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RESPONSE

Ross suggested the increased oxidative stress because of hyperglycemia among diabetics as an additional mechanism for the observed positive association between type 2 diabetes mellitus and risk of colorectal cancer in women in our study. Although this is an interesting hypothesis, no data support a direct association between hyperglycemia and colorectal cancer. In our study, the positive association between diabetes and colon cancer was greatest within 11–15 years after diagnosis of diabetes and diminished after 15 years of diagnosis. These data suggest a more important role of hyperinsulinemia versus hyperglycemia, because hyperinsulinemia exists at an early stage of insulin resistance and diabetes but, as glucose intolerance worsens, intensified hyperglycemia and depletion of β cells may lead to hypoinsulinemic response. Also, evidence exists that hyperinsulinemia increases risk of colon cancer by directly promoting colon carcinogenesis and stimulating insulin-like growth factor-I (IGF-I) (1,2) and that IGF-I levels significantly predict the risk of colorectal cancer (3).

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REFERENCES


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