Glycosylated Hemoglobin A1c and Lack of Association With Symptom Severity in Patients Undergoing Chemotherapy for Solid Tumors

Marilyn J. Hammer, PhD, DC, RN, Bradley E. Aouizerat, PhD, MAS, Brian L. Schmidt, DDS, MD, PhD, Frances Cartwright, PhD, RN, Fay Wright, RN, MS, APRN-BC, and Christine Miaskowski, RN, PhD, FAAN

The American Cancer Society and American Diabetes Association (ADA) issued a joint statement in 2010 that provided evidence that diabetes was a risk factor for cancer (Giovannucci et al., 2010). Compared to patients without diabetes, patients with diabetes are at greater risk for pancreatic (Huxley, Ansary-Moghaddam, Berrington de González, Barzi, & Woodward, 2005), hepatocellular (El-Serag, Hampel, & Javadi, 2006), breast (Boyle et al., 2012), ovarian (Lee et al., 2013; Shah et al., 2014), endometrial (Zhang, Su, Hao, & Sun, 2013), kidney (Larsson & Wolk, 2011), colorectal (Luo, Cao, Liao, & Gao, 2012), gastric (Yoon, Son, Eom, Durranse, & Park, 2013), thyroid (Schmid, Behrens, Jochem, Keimling, & Leitzmann, 2013), and bladder (Xu et al., 2013) cancers, as well as hematologic malignancies (e.g., non-Hodgkin lymphoma, leukemia, myeloma) (Castillo, Mull, Reagan, Nemr, & Mitri, 2012). About 18% of patients diagnosed with cancer have preexisting diabetes (Barone et al., 2008) compared to only 11% of the general population (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2015).

Hyperglycemia is the hallmark sign of diabetes, and having preexisting diabetes further increases the risk for hyperglycemic events while undergoing treatments for cancer. In addition, hyperglycemia can occur in patients with cancer independent of a diabetic history. Older age (Kezerle, Shalev, & Barski, 2014), higher body mass index (BMI) (Roumen, Blaak, & Corpeleijn, 2009), nutritional imbalances (Butler, Btaiche, & Alaniz, 2005; Jenkins et al., 2002; Martin-Salces, de Paz, Canales, Mesejo, & Hernandez-Navarro, 2008), lower levels of physical activity (Katz, 2007; Moien-Afshari et al., 2008), higher stress levels (Butler et al., 2005; Godbout & Glaser, 2006), administration of glucocorticoids (Butler et al., 2005; Mazali, Lalli, Alves-Filho, & Mazzali, 2008; Willi et al., 2002), some chemotherapy (CTX) regimens (Mazali et al., 2008; Ramos-Cebrián, Torregrosa, Gutiérrez-Dalmau, Oppenheimer, & Campistol, 2007;