

Impact of Hyperglycemia and Age on Outcomes in Patients With Acute Myeloid Leukemia

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Purpose/Objectives: To examine the prevalence and impact of hyperglycemia on health outcomes (number of neutropenic days, infection, and hospital length of stay) in patients hospitalized for acute myeloid leukemia (AML) receiving initial induction therapy.

Design: Retrospective, descriptive study.

Setting: A large urban hospital in Indianapolis, IN.

Sample: 103 patients with AML and a subset of 41 patients aged 65 years or older.

Methods: Demographics and medical information were extracted from electronic health records. Serum-fasting blood glucose was used to assess glycemic status. The association of hyperglycemia with the health outcomes was analyzed. A subset of patients aged 65 years or older was also analyzed.

Main Research Variables: Hyperglycemia, age, and health outcomes in patients with AML.

Findings: Forty patients experienced hyperglycemia during initial induction for AML. In the larger sample, no associations were noted between hyperglycemia and health outcomes. A significant relationship ($p = 0.022$) was noted between hyperglycemia and infection in patients aged 65 years or older. Patients aged 65 years or older had 5.6 times the risk of developing infection as those aged younger than 65 years. Although not statistically significant, patients aged 65 years or older with hyperglycemia had 2.5 more days of neutropenia and 1.5 days longer hospital length of stay.

Conclusions: This study provides preliminary evidence that hyperglycemia is prevalent during initial induction for AML and may have harmful consequences, particularly for patients aged 65 years or older. More research is needed to determine clinically significant levels of hyperglycemia and their impact on health outcomes.

Implications for Nursing: Oncology nurses can assess and proactively collaborate with members of the healthcare team to implement strategies to prevent or mitigate the harmful consequences of hyperglycemia.

Acute myeloid leukemia (AML), a hematologic cancer, is the most common type of acute leukemia in adults, particularly among older adults (O'Donnell et al., 2012). The incidence of AML increases with age (Rodak, Fritsma, & Keohane, 2011), with the median age being 67 years at diagnosis (O'Donnell et al., 2012). The diagnosis and treatment of AML are associated with acuity and with symptom and side effect profile (O'Donnell et al., 2012). One side effect, hyperglycemia, has been shown to be detrimental in critical care and general medical-surgical patients (Richardson & Pollack, 2005), but is not well understood in patients with cancer.

Hyperglycemia, a disorder of glucose metabolism, is clinically defined as blood glucose of 126 mg/dl or greater (American Diabetes Association [ADA], 2015). Hyperglycemia is common in critical care and hospitalized patients, with about 32%