Management of Steroid-Induced Hyperglycemia in Hospitalized Patients With Cancer: A Review

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Glucocorticoids are prescribed for hospitalized patients with cancer for a variety of reasons, including cerebral edema, nausea prevention, and as part of a cancer treatment regimen. Glucocorticoids are known to cause hyperglycemia. Hyperglycemia (steroid-induced or otherwise) among noncritically ill hospitalized patients has been shown to lead to increased length of hospital stay, delayed wound healing, increased infections, and higher mortality rates (Lleva & Inzucchi, 2011), which suggests the need for improved management strategies. The purpose of this review was to integrate the published research on the management and the effects of management of steroid-induced hyperglycemia among hospitalized adult patients with cancer with or without preexisting diabetes.

Background

Inpatient hyperglycemia, which occurs in 32%–38% of hospitalized patients, is defined as having blood glucose values greater than 140 mg/dl during hospitalization (Moghissi et al., 2009; Smiley & Umpierrez, 2010; Umpierrez et al., 2012). This elevated glucose level can occur for various reasons, including omission of antidiabetic agents in patients with known diabetes, stress hyperglycemia as a result of acute illness, and steroid-induced hyperglycemia (American Diabetes Association [ADA], 2013). Regardless of the underlying cause, hyperglycemia in hospitalized patients (with or without diabetes) has been associated with poor outcome (Moghissi et al., 2009). On the basis of the reported incidence of hyperglycemia among hospitalized patients, the ADA's (2011) Clinical Practice Recommendations suggested that all patients with known diabetes and/or those receiving medications associated with hyperglycemia receive glucose monitoring during hospitalization in conjunction with meals or at meal times or every four to six hours if not eating. In 2013, the ADA further recommended that glucose monitoring be conducted in patients without

Problem Identification: Glucocorticoids are prescribed for hospitalized patients with cancer for a variety of reasons, including cerebral edema, treatment and prevention of nausea, and as part of cancer treatment regimens. Glucocorticoids are known to cause hyperglycemia. The purpose of this study was to integrate the published research on the management and the effects of steroid-induced hyperglycemia in hospitalized adult patients with cancer with or without preexisting diabetes.

Literature Search: MEDLINE®, PubMed, EMBASE, CINAHL®, and Scopus electronic databases were used to identify relevant articles. Bibliographies of included studies were reviewed for any pertinent studies that were not obtained through database search.

Data Evaluation: 1,392 studies were identified. A total of 18 studies that met criteria were fully reviewed, 6 of which met all of the inclusion criteria.

Data Analysis: Data were abstracted from the included studies using a systematic code sheet to document characteristics of the studies and findings on management of hyperglycemia. Characteristics of the studies and findings on management of hyperglycemia were organized into three tables: the patients did not have preexisting diabetes, the patients had preexisting diabetes, and patients with or without preexisting diabetes were both included in the study. Management and effects of management of hyperglycemia were then compared and synthesized.

Presentation of Findings: Hyperglycemia occurs in hospitalized patients with cancer irrespective of whether patients have a prior history of diabetes. Hyperglycemia resulting from steroids is treated in a variety of ways, but the resulting glycemic control has not been consistently documented. However, this review suggests that scheduled insulin (basal-bolus) is effective in attainment of glucose targets.

Implications for Practice: Nurses should be aware of the effect that steroids have on glycemic control in patients and should be empowered to request or perform blood glucose monitoring when appropriate. Nurses can identify those patients receiving steroids and assess for signs and symptoms of hyperglycemia. They also can review routine laboratory results and assess for hyperglycemia in patients receiving steroids.

Key Words: hospitalized patients; cancer; steroids

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