Stress-Induced Hyperglycemia Is a Predictor of Hospital Length of Stay in Nondiabetic Geriatric Patients with a Hip Fracture

Jonathan M. Gross, MD, MPH*; Seleshi Demissie, DrPH, MPH; Peter Fusco, MS; Galina Glinik, MD; Joshua Greenstein, MD; Barry Hahn, MD; Justin Yoon, MS; David Younan, MD*

Purpose: Hip fractures resulting from ground level falls are common in the geriatric population. Stress- induced hyperglycemia is associated with worse outcomes among geriatric trauma patients. We sought to investigate the association of stress-induced hyperglycemia with outcomes in geriatric patients admitted with hip fracture due to low-energy falls.

Methods: This was a retrospective review of a prospectively maintained database of geriatric trauma patients (age >65 years) who were admitted to our Level I trauma center after sustaining a hip fracture (neck of femur, intertrochanteric, and subtrochanteric) resulting from a low-energy trauma (eg, fall from standing or sitting) between January 2018 and July 2022. With IRB approval, data collected included demographics, vital signs, laboratory data, concomitant injuries, length of stay, and morbidity and mortality events during admission. Patients with a history of diabetes were excluded. Non-diabetic patients were divided into 2 groups based on the emergency department blood glucose level (≤120, >120 mg/dL). Multivariable regression analysis was performed for the association between stress-induced hyperglycemia and hospital length of stay. Other variables included in the analysis were ISS, presence of comorbidities, age, race, and gender.

Results: 972 non-diabetic geriatric patients were admitted with a hip fracture during the study period. There were significant differences between the hyperglycemic and non-hyperglycemic groups regarding race ($P = 0.01$), emergency department heart rate ($P<0.01$), and hospital length of stay ($P = 0.01$). Multivariate regression analysis showed stress-induced hyperglycemia ($P = 0.011$), ISS ($P = 0.003$), male gender ($P = 0.001$), and the presence of more than 1 comorbidity ($P = 0.045$) were independently predictive of a longer hospital length of stay; age ($P = 0.723$) and race ($P = 0.107$) were not.

Conclusion: Blood glucose level higher than 120 mg/dL in the emergency department is an independent predictor of hospital length of stay among non-diabetic geriatric patients with a hip fracture after a low-energy fall. ISS, gender, and the presence of more than 1 comorbidity are also independent predictors.