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TACSM Abstract

Role of Acute and Chronic Glycemic Control on COVID-19 Severity and Length of Hospital Stay in Hospitalized Patients

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ABSTRACT
COVID-19 patients with diabetes have greater morbidity and mortality. Glycated hemoglobin (A1c) indicates chronic glycemic control and is considered a standard of care in the diagnosis and management of diabetes. Whereas, fasting blood glucose (FBG) indicates acute glycemic control and is also recommended option to diagnose diabetes. PURPOSE: The purpose of this study was to determine the effects of acute and chronic glycemic control on severity and length of hospital stay among hospitalized patients with COVID-19. METHODS: This retrospective study used medical records from patients admitted to the University Medical Center, El Paso, TX with COVID-19 (n=364; age 60.0 ± 0.8 years; BMI 30.3 ± 0.4 kg/m²). Chronic and acute glycemia were assessed by A1c and FBG at the time of hospitalization. The severity of the COVID-19 outcome was measured by quick sepsis-related organ failure assessment (qSOFA) and the length of hospitalization was determined by the number of days spent in the hospital. Patients were categorized into 4 groups based on chronic and acute glycemia defining diabetes status. G1: diagnosed no diabetes by both A1c and FBG (A1c<6.5%, FBG<126 mg/dl), G2: diagnosed diabetes by FBG but no diabetes by A1c (A1c<6.5%, FBG≥126 mg/dl), G3: diagnosed diabetes by A1c but no diabetes by FBG (A1c≥6.5%, FBG<126 mg/dl), and G4: diagnosed diabetes by both A1c and FBG (A1c≥6.5%, FBG≥126 mg/dl). One-way ANOVA with posthoc Tukey test was used to determine the statistical differences among groups. RESULTS: Patients diagnosed as diabetes by FBG but not A1c (G2) had a greater COVID-19 severity, measured by qSOFA, compared with the other 3 groups. (G2: 0.61 ± 0.14 vs. G1: 0.24 ± 0.05; P<0.004, G2: 0.61 ± 0.14 vs. G3: 0.16 ± 0.06; P<0.001, and G2: 0.61 ± 0.14 vs. G4: 0.31 ± 0.04; P<0.015). Additionally, this study found a greater length of hospitalization in G2 to compare with G1 (G2: 12.91 ± 1.99 vs. G1: 6.36 ± 0.56 days; P<0.002). CONCLUSION: Patients with acute glycemia represent higher severity and longer length of hospital stay among hospitalized COVID-19 patients. Management of FBG should be considered in the treatment of hospitalized COVID-19 patients.