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Glycemic variability and in-hospital mortality of elderly patients in the ICU

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Objective: Significant glucose variability affects the outcome of critically ill patients but has not been well studied in elderly patients in the intensive care unit (ICU). Our objective was to determine the effect of glycemic variability on the in-hospital mortality among critically ill elderly patients.

Methods: We conducted a retrospective cohort study including elderly patients aged 65 years old and above who were admitted to the ICU. Measures of glycemic variability such as standard deviation (SD), coefficient of variation (CV), mean amplitude of glycemic excursion (MAGE), and glycemic lability index (GLI) were calculated. Multiple logistic regression analysis was used to determine the association of glycemic variability on in-hospital mortality.

Results: All glycemic indices were significantly higher among in-hospital deaths except GLI. SD was removed from the logistic model due to presence of collinearity. Multivariate logistic regression analysis showed that glycemic variability as measured by CV, MAGE, and GLI was not associated with in-hospital mortality. However, when mortality was plotted against CV quartiles when patients were sub-grouped according the mean glucose level, there was a trend towards greater in-hospital mortality with increasing glycemic variability among patients with mean glucose level (MGL) greater than 180 mg/dL.

Conclusion: Glycemic variability is not independently associated with in-hospital mortality among critically ill elderly patients after adjusting for other factors. However, findings of higher mortality among elderly patients with increasing glycemic variability in patients with MGL more than 180mg/dL warrants further investigation to determine if the association is present in this subgroup of patients.