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New continuous glucose monitoring reveals hypoglycemia risk in both diabetic and nondiabetic patients with acute myocardial infarction

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Background: There has been growing evidence that the glucose fluctuation is an important contributing factor to the development of coronary artery disease. However, whether large glucose fluctuation, especially hypoglycemia, may be associated with acute myocardial infarction (AMI) remains largely unknown.

Aim: As new continuous glucose monitoring (CGM) has recently become available to evaluate glucose fluctuation from immediately after an emergency visit, this study sought to investigate glucose fluctuation and the occurrence of hypoglycemia in patients with AMI.

Methods: In this prospective study, 93 consecutive patients with AMI from April 2017 to November 2018 were enrolled. Subcutaneous interstitial glucose levels were monitored from emergency room to discharge using the CGM System. Based on the CGM data, 24-h mean glucose levels, the time in hyperglycemia and hypoglycemia and the occurrence of hypoglycemia, defined as less than 70 mg/dL, were measured, and the mean amplitude of glycemic excursions (MAGE) were calculated.

Results: The majority of patients [n=57, 61% (non-DM)] did not have diabetes and 36 patients had diabetes (DM). The occurrence of hypoglycemia within 24 hours after admission was observed in 49 patients [DM: n=11 (30.6%), non-DM: n=38 (66.7%)]. MAGE within 24 hours after admission were 100 ± 47 in DM patients and 67 ± 20 in non-DM patients. The mean time in hypoglycemia within 24 hours after admission was 148 minutes [DM: 100 ± 260 minutes, non-DM: 178 ± 287 minutes]. The occurrence of hypoglycemia during a hospital stay (mean 11.5 days) was detected in 76 patients [DM: n=28 (77.8%), non-DM: n=48 (84.2%)].

Conclusion: Not only in DM patients but also in non-DM patients with AMI, large glucose fluctuation and high incidence of hypoglycemia were observed using new CGM system. Further investigations should address the rationale for the early detection and control of glucose fluctuation for AMI patients.

