DO HYPOGLYCAEMIA AND HYPERGLYCAEMIA HAVE SIMILAR EFFECTS ON ALL-CAUSE MORTALITY ACROSS THE SPECTRUM OF SEVERITY OF CORONARY ARTERY DISEASE?

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Objectives We have previously reported that in older patients with acute myocardial infarction (AMI), increased as well as mildly decreased admission fasting plasma glucose (FPG) levels could predict higher in-hospital and 3-year mortality. Although more attention has been paid to glucose level abnormalities, many missing links in the chain of evidence remain in our understanding of the association between glycaemia and prognosis. The aim of this study therefore was to assess the association between admission FPG levels and all-cause mortality among patients with stable coronary artery disease (SCAD), unstable angina pectoris (UAP) and acute myocardial infarction (AMI) by analysing data from the Beijing Heart and Metabolism Survey (BHMS).

Methods A total of 18 999 consecutive patients were recruited. According to the quartiles of FPG levels, patients were categorised into 4 groups: Q1, FPG<5.1 mmol/l; Q2, 5.1 mmol/l ≤ FPG<5.9 mmol/l; Q3, 5.9 mmol/l ≤ FPG<7.5 mmol/l; and Q4, FPG≥7.5 mmol/l. Q1 was recognised as the hypoglycaemic group, Q2/Q3 as the relatively euglycemic groups, and Q4 as the hyperglycaemic group. The primary end point was in-hospital and 2-year all-cause mortality.
Results Both the hypo- and hyperglycaemic groups were associated with higher in-hospital and 2-year all-cause mortality in the overall cohort. However, the association between hypoglycemia and mortality varied across the CAD severity spectrum. In patients with AMI, in-hospital mortality for Q1 to Q4 was 1.0%, 0.9%, 0.2%, and 1.5%, respectively (p value=0.001); and 2-year mortality for Q1 to Q4 was 1.7%, 0.9%, 0.3%, and 1.8%, respectively (p value <0.001). In patients with SCAD, in-hospital mortality for Q1 to Q4 was 0.3%, 0.3%, 0.2%, and 0.5%, respectively (p value=0.691); and 2-year mortality for Q1 to Q4 was 0.3%, 0.7%, 0.7%, and 0.5%, respectively (p value=0.566). After adjusting for confounding factors, this observation persisted in multivariable analysis.

Conclusions The association between hypoglycemia and mortality differed across the CAD severity spectrum. In patients with AMI, there was a U-shaped relationship between admission FPG levels and short- and long-term mortality. In patients with SCAD or UAP, mild to moderately decreasing FPG level (<5.1 mmol/l) was neither associated with higher mortality nor with reduced short- and long-term mortality as traditionally understood. An initial admission FPG level of 5.1–7.5 mmol/l may be desirable because it was associated with better clinical outcomes.