

Stress Hyperglycaemia and Glycaemic Control Post Cardiac Surgery: Relaxed Targets May Be Acceptable

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Abstract : Introduction: Stress hyperglycaemia is common following cardiac surgery. Its optimal management is uncertain and may differ by diabetic status. This study assesses the in-hospital glycaemic management of cardiac surgery patients and associated postoperative outcomes. Methods: A retrospective cohort analysis of all patients undergoing cardiac surgery at Fiona Stanley Hospital from February 2015 to May 2019 was undertaken. Management and outcomes of hyperglycaemia following cardiac surgery were assessed. Follow-up was assessed to 1 year postoperatively. Multivariate regression modelling was utilised. Results: 1050 non-diabetic patients and 689 diabetic patients were included. In the non-diabetic cohort, patients with mild (peak blood sugar level [BSL] < 14.3), transient stress hyperglycaemia managed without insulin were not at an increased risk of wound-related morbidity (P=0.899) or mortality at 1 year (P=0.483). Insulin management was associated with wound-related readmission to hospital (P=0.004) and superficial sternal wound infection (P=0.047). Prolonged or severe stress hyperglycaemia was predictive of hospital re-admission (P=0.050) but not morbidity or mortality (P=0.546). Diabetes mellitus was an independent risk factor 1-year mortality (OR; 1.972 [1.041-3.736], P=0.037), graft harvest site wound infection (OR; 1.810 [1.134-2.889], P=0.013) and wound-related readmission (OR; 1.866 [1.076-3.236], P=0.026). In diabetics, postoperative peak BSL > 13.9mmol/L was predictive of graft harvest site infections (OR; 3.528 [1.724-7.217], P=0.001) and wound-related readmission OR; 3.462 [1.540-7.783], P=0.003) regardless of modality of management. A peak BSL of 10.0-13.9 did not increase the risk of morbidity/mortality compared to a peak BSL of < 10.0 (P=0.557). Diabetics with a peak BSL of 13.9 or less did not have significantly increased morbidity/mortality outcomes compared to non-diabetics (P=0.418). Conclusion: In non-diabetic patients, transient mild stress hyperglycaemia following cardiac surgery does not uniformly require treatment. In diabetic patients, postoperative hyperglycaemia with peak BSL exceeding 13.9mmol/L was associated with wound-related morbidity and hospital readmission following cardiac surgery.

Keywords : cardiac surgery, pulmonary embolism, pulmonary embolectomy, cardiopulmonary bypass

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