**The Management of Stress Hyperglycaemia in Patients Experiencing Acute Coronary Syndrome – A Topic Worth Revisiting**

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# Letter/Correspondence

This correspondence is intended to draw attention back towards an important and relatively poorly evidenced area of everyday practice for cardiovascular physicians.

Stress hyperglycaemia is an important and often neglected condition with potentially fatal consequences. Yet, the current evidence base is insufficient to guide optimal management of the condition. In fact, it falls some way short, leaving clinicians relying on first principles and vague guidance to manage individuals with complex and interacting medical issues.

Stress hyperglycaemia during myocardial infarction is defined by the National Institute of Clinical Excellence (NICE) as blood glucose ≥11mmol/L during acute coronary syndrome (1). The phenomenon presents an interesting dichotomy in which it has long-been recognised but relatively poorly understood and defined (2). This can be attributed to its complex physiology and the lack of a clear consensus of its true effects on patient outcomes. The degree of hyperglycaemia during cardiovascular illness which is considered pathological and not physiological remains unknown (3). However, stress hyperglycaemia as defined broadly by current guidance remains highly prevalent and extremely high values of blood glucose are considered to be detrimental to outcomes including but not limited to overall mortality.

Despite this fact, there is a lack of consensus on the optimal management of individuals presenting with stress hyperglycaemia during acute coronary syndrome. There is also minimal evidence-based guidance on the appropriate management of the condition in patients with demographic and other factors which are known to influence the outcomes of the condition, such as diabetes status.

Exogenous insulin infusion therapy alongside glucose infusion is the current recommended management. However, there is a requirement for practitioners to consider both the risks of high blood glucose during acute coronary syndrome alongside the well-documented risks of hypoglycaemia, particularly in those with previously diagnosed Diabetes Mellitus (4). Whilst this recommendation is both logical and evidence-based, the quantitative values of blood glucose at which therapy should be initiated and to what extent blood glucose should be controlled is less clear. Tight blood glucose control is considered to increase the risk of hypoglycaemic events whilst offering limited benefit to those with stress hyperglycaemia (6). Thus, the general consensus is that blood glucose should be maintained at between approximately 6mmol/L and 10mmol/L (7).

The greatest volume of evidence to support current strategies can be derived from studies relating to critically ill patients, both with and without cardiovascular illness (4,6). However, deriving guidance from such a heterogenous population neglects to consider the cardiovascular specific aspects of stress hyperglycaemia and its management, details of which are beyond the scope of this correspondence. This raises questions relating to both the validity of data to support current management, and the potential of targeting cardiac specific mechanisms in order to optimise patient management.

Current NICE guidance on the management of hyperglycaemia during acute coronary syndrome (1) is based on the findings of four studies focussing specifically on the management of stress hyperglycaemia in individuals experiencing acute coronary syndrome (7–10). These studies were heterogenous in both design and population, yielding inconsistent results and thus providing an incomplete evidence base from which to derive guidance. The results did however support the current consensus that tight glycaemic control is associated with increased risk of adverse events but does not confirm nor refute that current guidance is optimal for the management of the population in question. The studies themselves have also been undertaken over the last couple of decades, a period of time during which there has quite clearly been a frameshift in the way acute coronary syndrome is managed, thus distorting any meaningful data collected. More recent advances in the development of oral hypoglycaemic agents provides another exciting area of endocrine pharmacological research which is as yet relatively unstudied with respect to stress hyperglycaemia in cardiac patients.

With the aforementioned in mind, this letter of correspondence serves as a reminder to researchers and practitioners alike to reconsider current guidance on the management of stress hyperglycaemia in those experiencing acute coronary syndrome. It appears that focus has moved away from this highly important topic and neglected to consider the existing paucity of the evidence base, as well as the potential implications of the rapidly developing cardiovascular and pharmacological sciences. The important question relating to the implication of patient demographics and previous diagnoses on optimal management also remains unanswered.

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