Journal of Diabetes and Its Complications 33 (2019) 508

Contents lists available at ScienceDirect

Journal of Diabetes and Its Complications

journal homepage: WWW.JDCJOURNAL.COM

Relation between cortisol and admission blood glucose in patients admitted with myocardial infarction but without hyperglycaemia!☆

We read with interest the article by Cheung et al.[1] The authors attempt to establish a relationship between blood glucose on admission (ABG) with myocardial infarction and cortisol levels in patients without known diabetes mellitus (DM).

ABG >7.8 mmol/l is defined as "stress hyperglycaemia" (SH). In the reference quoted[2] the Endocrine Society does not label this as "stress hyperglycaemia". It recommends in-hospital HbA1c testing in these patients without known DM. HbA1c was measured but not reported making it is unclear as to how many of these patients had pre-admission hyperglycaemia. Even though HbA1c may not have been used for clinical purposes as per the Australian national consensus, it would have indicated the proportion of patients with undiagnosed abnormal glucose tolerance (AGT). In the absence of this data these patients can be labelled as having "hospital related hyperglycaemia" at best.

The patients with ABG ≥7.8 mmol/l and normal BG on follow up may have had SH. Some of these patients were diagnosed "normal" only on fasting BG (FBG). Without OGTT, AGT may have been missed in some. FBG alone under-diagnoses AGT.[3] This would reduce the number of patients that could be labelled as SH. It is likely that at least some of the 97 patients with ABG <7.8 mmol/l who did not undergo OGTT or HbA1c measurement would have undiagnosed AGT and therefore not "normal".

The authors relate the degree of AH to severity of stress on the basis of a positive correlation between ABG and cortisol that existed only in the "normal glucose tolerance" group. 83% of these patients had normal ABG and therefore did not have SH. Without OGTT or HbA1c it is also impossible to say how many had undiagnosed AGT. Thus, it may be unreasonable to conclude that the degree of AH, when AH is absent, relates to the severity of stress in this group. It is difficult to explain the positive correlation between ABG and cortisol in patients that do not have hyperglycaemia. This however raises the question as to whether "stress" leads to a rise in BG that is not enough to cross the current diagnostic threshold for SH but may well correlate with the cortisol. This may have a prognostic significance. The second possibility is a chance statistical correlation due to the small number of subjects. It would be interesting to see the relation between ABG and cortisol in patients with AH with normal OGTT who may truly have had SH.

Sudipta Chattopadhyay
Department of Cardiology, Milton Keynes University Hospital, Milton Keynes, UK
Corresponding author at: Department of Cardiology, Milton Keynes University Hospital, Standing Way, Milton Keynes MK6 5LD, UK.
E-mail address: Sudipta.Chattopadhyay@nhs.net.

Joseph John
Department of Cardiology, Castle Hill Hospital, Kingston upon Hull, UK

https://doi.org/10.1016/j.jdiacomp.2019.04.002

References

1. Cheung NW, Wong KYC, Kovoor P, McLean M. Stress hyperglycemia: a prospective study examining the relationship between glucose, cortisol and diabetes in myocardial infarction. J Diabetes Complications 2019;33:329-34.
2. Umpierrez GE, Hellman R, Korytkowski MT, Kosiborod M, Maynard GA, Montori VM, et al. Management of hyperglycemia in hospitalized patients in non-critical care setting: an endocrine society clinical practice guideline. J Clin Endocrinol Metab 2012;97:16-38.
3. Chattopadhyay S, George A, John J, Sathyapalan T. Two-hour post-challenge glucose is a better predictor of adverse outcome after myocardial infarction than fasting or admission glucose in patients without diabetes. Acta Diabetol 2018;55:449-58.