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Is stress hyperglycaemia a prognostic marker of left ventricular remodelling after first anterior myocardial infarction?

Previous studies demonstrated that stress hyperglycaemia (SH) is associated with an adverse outcome in patients with acute myocardial infarction (AMI). Recently, Bauters et al. suggested that SH is a major and independent predictor of left ventricular remodelling after anterior AMI in non-diabetic patients, postulating that this effect may partly account for the increased rate of mortality associated with SH. These investigators have shown that non-diabetic patients with SH demonstrated a higher degree of left ventricular remodelling at 1 year following the index infarction and interestingly SH remained a major predictor of remodelling after adjusting for the extent of infarct size. However, they did not take into account, as they correctly state in the limitation section of their manuscript, the markers of neurohormonal activation such as BNP plasma levels that may accurately predict remodelling following AMI.2

We have recently commented on a paper by the same (REVE) study group3 and documented our own experience concerning left ventricular remodelling in a similar—but rather smaller—cohort of patients facing first anterior AMI. Our findings were supportive of the frequency of the remodelling process observed earlier. Furthermore, we emphasized the significant association of pre-existing left ventricular hypertrophy and BNP plasma levels with subsequent remodelling.4

When we used the change in left ventricular end-diastolic volume index as the index marker of left ventricular remodelling in 40 (>53) patients with no history of diabetes mellitus, we found that SH (r = 0.471, P = 0.004), left ventricular mass index (r = 0.294, P = 0.03), left ventricular mass/volume ratio (measure of concentric hypertrophy, r = 0.571, P = 0.001) and BNP plasma levels measured at discharge of the index infarction (r = 0.436, P = 0.01) were all positively correlated with the remodelling process in a 6 month period. Median glycaemia at admission was 130 mg/dL and SH was defined as glycaemia on admission >130 mg/dL. Interestingly, we observed that patients with SH had significantly higher levels of BNP at discharge (1088 ± 302 vs. 395 ± 116 pg/mL, P = 0.05). Further, using multivariate linear regression analysis, we found that the most significant predictors of left ventricular remodelling were BNP levels (β-coefficient = 0.392, P = 0.04) and mass/volume ratio (β-coefficient = 0.460, P = 0.02). Thus, we concluded that SH when adjusted for BNP plasma levels was not associated with remodelling at 6 months. Further studies are needed in order to establish the significance of SH to predict left ventricular remodelling in non-diabetics patients following AMI.

References


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Is stress hyperglycaemia a prognostic marker of left ventricular remodelling after first anterior myocardial infarction?: reply

We thank Papadopoulos et al. for their interest in our manuscript. Their findings that stress hyperglycaemia was associated with left ventricular remodelling after anterior myocardial infarction (r = 0.471; P = 0.004) is indeed concordant with our results. The covariates that were available for inclusion into the multivariate models however differed and brain natriuretic peptide (BNP) levels were not routinely obtained in the REVE study. The demonstration that BNP plasma levels were significantly higher in patients with stress hyperglycaemia and that stress hyperglycaemia was not an independent predictor of left ventricular remodelling when BNP was included into the multivariate model is also interesting. BNP which has been previously associated with left ventricular remodelling4 could be the marker of choice in clinical practice. However, due to the limited number of patients in their data set (n = 40), we believe...