BETA-BLOCKERS FOR NON-CARDIAC SURGERY: A DIFFERENT APPROACH AFTER THE POISE DATA OR WAIT MORE INFORMATION?

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Recent publication of the PeriOperative ISchemic Evaluation (POISE) trial has added considerable important data to our understanding of acute perioperative beta-blockade1. Due to the number of potential triggers of perioperative cardiac events; including amongst others, inflammation, surgical stress, hypercoagulable states and hypoxia2, it has been estimated, that at best, a single medical therapy could be expected to result in a relative risk reduction of 20 to 35% for the composite endpoint of cardiac death, nonfatal myocardial infarction and nonfatal cardiac arrest in the perioperative period1. As a result, before POISE, it was controversial whether perioperative beta-blockers were indeed cardioprotective2. What POISE has shown is that acute perioperative beta-blockade does in fact decrease perioperative nonfatal myocardial infarction1.

What is also now known is that there is a potential ‘cost’ associated with this benefit. It was appreciated prior to POISE that acute perioperative beta-blockade significantly increased drug associated bradycardia and hypotension3, although clinical significance of these events was unknown. The most important data to emerge from the POISE study were that these drug associated side-effects are associated with major morbidity4. Clinically significant hypotension and bradycardia were found to be independent predictors of mortality and clinically significant hypotension, an independent predictor of perioperative stroke1. This clinically important data requires a change in our practice with respect to acute perioperative beta-blockade.

It is imperative that these side-effects are now actively managed. Good research it raises further questions for which we must again gather data.

Conflict of interest: none

References

It is also imperative that we now start to reconsider our perioperative prescription of acute beta-blockade. One suggestion has been that a longer preoperative run in period is necessary, using a lower dose of beta-blocker titrated to effect over days5 as opposed to a higher dose, titrated over hours1. This approach may result in less beta-blocker associated hypotension and bradycardia1. This certainly needs further investigation. However, it does potentially present a number of logistical problems in the initiation and titration of beta-blockers in patients being managed as outpatients at the time of beta-blocker prescription, as opposed to the simpler inpatient preoperative prescription as in the POISE trial.

The most worrying data to emerge from POISE relate to the increased all-cause mortality. Although, it is possible that attention to perioperative haemodynamic factors may decrease (or hopefully obviate) this devastating complication of perioperative beta-blockade, it is probably prudent to adopt a more conservative approach to prescription of acute perioperative beta-blockade, until this is confirmed. This begs the question: ‘In which patient groups are acute perioperative beta-blockers clearly beneficial?’ The POISE study suggests that vascular surgical patients and patients of intermediate cardiac risk (two cardiac clinical risk predictors3) benefit from perioperative beta-blockade (Figure 3 of POISE)5. While acute perioperative beta-blockade may be reasonable in these patients, all other patients should probably have a more cautious risk-benefit analysis conducted prior to institution of perioperative beta-blockers. Importantly, there is still little data on the outcomes associated with acute perioperative beta-blockade in patients with four or more cardiac risk factors5, where myocardial ischaemia has not been demonstrated in response to a dynamic ventricular test3-5. This patient group certainly needs further investigation.

Yes, a different approach to perioperative beta-blockade is advocated after publication of the POISE data1. However, like all good research it raises further questions for which we must again gather data.