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

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Recent publication of the PeriOperative ISchemic Evalution (POISE) trial has added considerable important data to our understanding of acute perioperative beta-blockade[1]. Due to the number of potential triggers of perioperative cardiac events; including amongst others, inflammation, surgical stress, hypercoagulable states and hypoxia[2], 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 period[3]. As a result, before POISE, it was controversial whether perioperative beta-blockers were indeed cardioprotective[2]. What POISE has shown is that acute perioperative beta-blockade does in fact decrease perioperative nonfatal myocardial infarction[1].

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 hypotension[2], 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 morbidity[1]. Clinically significant hypotension and bradycardia were found to be independent predictors of mortality and clinically significant hypotension, an independent predictor of perioperative stroke[1]. 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 in the perioperative period. In addition, it is crucial that other complications which may be exacerbated by either drug associated bradycardia or hypotension are always considered and excluded. It is possible, in fact, that a missed or delayed diagnosis of hypovolaemia, sepsis, hypoxia or anaemia may have adversely affected outcomes in the POISE trial. Indeed, there were significantly more sepsis related deaths in the metoprolol group in the POISE trial[1].

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 days[4] as opposed to a higher dose, titrated over hours[1]. This approach may result in less beta-blocker associated hypotension and bradycardia[4]. 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 predictors[5]) benefit from perioperative beta-blockade (Figure 3 of POISE)[1]. 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 factors[5], where myocardial ischaemia has not been demonstrated in response to a dynamic ventricular test[1-6], This patient group certainly needs further investigation.

Yes, a different approach to perioperative beta-blockade is advocated after publication of the POISE data[1]. However, like all good research it raises further questions for which we must again gather data.

Conflict of interest: none

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