

REPLY

We would like to thank both Dr. Herkkamp and Dr. Luger *et al.* for their interest in our article. We apologize for our incomplete literature search. The study by Luger *et al.*¹ did not appear in our search due to the language difference. However, our failure to locate the study by Herkkamp² was an oversight on our part.

The discrepancy found in our study between arterial and capillary samples that was not found by Luger *et al.*, may have been due to the method of capillary sampling, as mentioned by Dr. Luger. We used earlobe capillary samples as that was all that was available to us due to positioning of the cardiac patients in our study.³ Perhaps a different site such as the finger tip would have given us more reliable results. We agree with practice of drawing two samples, thereby giving a more reliable haemoglobin estimate.

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Combined epidural/general anaesthesia

The incidence of perioperative myocardial ischaemia in patients undergoing regional anaesthesia and postoperative analgesia has been the subject of some contradictory studies. Garnett *et al.* failed to reduce the incidence of ischaemia using epidural local anaesthesia during and after surgery.¹

The hypothesis is simple: are the harmful effects of surgery reduced if the patient can be shielded from nociceptive afferent input? This requires complete deafferentation of the injured area and the upper and lower segmental limits of sensory blockade should be documented following establishment of the block, at the end of surgery and postoperatively. Neither Garnett's study, nor the studies cited in the paper contain complete documentation of the extent of epidural blockade.

Examination of 16 manuscripts published over the last three years investigating the influence of epidural

local anaesthetics on outcome revealed that only eight studies had a detailed record of the segmental extent of the sensory blockade throughout the experimental period.² The remainder assumed that placement of an epidural catheter and administration of a fixed dose of analgesic would achieve effective blockade. However, epidural catheters go astray³ and fixed-dose schedules do not achieve predictable spread. Without frequent monitoring of the limits of analgesia we cannot determine whether epidural dosage is adequate.

We conclude that although the study by Garnett *et al.* highlighted the importance of postoperative management, the definitive paper comparing the influence of regional and general anaesthesia on postoperative myocardial ischaemia in patients undergoing abdominal aortic aneurysm repair is still required.

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- 2 Bromage PR. 50 years on the wrong side of the reflex arc (Editorial). Symposium: Future Directions of Acute Pain Management, The American Society of Regional Anesthesia, May 31–June 2, 1996.
- 3 De Leon-Casasola OA, Myers DP, Rempel J, Bacon D, Peppriell J, Lema MJ. A prospective analysis of epidural catheter migration in 1598 surgical cancer patients. *Anesthesiology* 1991; 75: A730.

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Drs. Carli, Klubien and Baker's major objection to our efforts to use epidural anaesthesia and analgesia to reduce perioperative myocardial ischemia was that we did not document the extent of the epidural block pre, per and post operatively. The implication is that unless the extent of the block is verified, the study is invalid.

Nothing is further from the truth. We attempted to investigate the effect of epidurals on ischaemia in a clinically useful fashion. Like any clinician, we ensured that the block was working at the beginning of the case. I don't know of any way to verify the block intra operatively without the withdrawal of general anaesthesia,