

Do inhalational anaesthetics provide clinically relevant cardioprotection in patients undergoing non-cardiac surgery?

Manfred D. Seeberger

University Hospital Basel, Basel, Switzerland

Cardiac complications due to coronary artery disease (CAD) are the leading cause of morbidity and mortality after major surgery (1-3). Multiple efforts have been made to improve outcome by modifying peri-operative management. Studies performed in these efforts have investigated the effects of peri-operative administration of β -receptor blockers (4,5) and statins (6), and of choice of anaesthetic technique (7) or anaesthetic agent (8, 9) on the incidence of cardiac complications.

In vitro- and animal models suggested that administration of volatile anaesthetic prior to myocardial ischaemia reduced myocardial infarct size (10-12). This effect called "anaesthetic preconditioning" is characterized by a short-term memory phase with immediate protection (10) and by a late protection phase 12 – 72 hours after exposure (13). In patients undergoing coronary artery bypass graft surgery, evidence suggests that volatile anaesthetics provide clinically relevant anaesthetic preconditioning. Effects found in patients undergoing coronary artery bypass surgery include better preserved left ventricular function, reduced length of stay in the intensive care unit and in the hospital (14-17), and even a lower incidence of late cardiac events (18). Based on this evidence obtained in patients undergoing coronary artery bypass surgery, current AHA/ACC guidelines (19) recommend the use of volatile anaesthetics as beneficial in haemodynamically stable patients undergoing non-cardiac surgery. However, studies on the clinical value of preconditioning by volatile anaesthetics in non-cardiac surgery are scarce.

This lecture will review published studies on the effects of volatile anaesthetics on outcome after non-cardiac surgery. In addition, it will present preliminary data of a prospective, randomized Swiss multi-centre study that compared the effects of volatile vs. intravenous anaesthesia on the incidence of peri-operative ischaemia and cardiac morbidity and mortality in cardiac high-risk patients undergoing major non-cardiac surgery.

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