

Organ protection with anesthetic agents: myth or reality

Stefan G. De Hert, MD, PhD*

* Professor of Anesthesiology.

University of Amsterdam. Chair of the Division of Cardiothoracic and Vascular Anesthesia.

Academic Medical Center Meibergdreef 9 1105AZ Amsterdam, The Netherlands.

Increasing experimental evidence has indicated that volatile anesthetic agents may exert direct cardioprotective effects. These effects occur independently from their effects on myocardial oxygen balance and are related to an anesthetic preconditioning and postconditioning effect.

The implementation of these properties during clinical anesthesia might provide an additional tool in the treatment and/or prevention of ischemic cardiac dysfunction in the perioperative period. In clinical practice, these effects should be associated with improved cardiac function, ultimately resulting in a better outcome in patients with coronary artery disease. This potential application of anesthetic agents has only recently been explored and its applicability in clinical practice is subject of ongoing research.

Several clinical studies in cardiac surgery have demonstrated that the use of a volatile anesthetic regimen is

associated with a better preservation of postoperative myocardial function and less evidence of myocardial damage as evidenced by lower postoperative troponin levels.

Also at the level of other organ systems (liver, lung), recent clinical data indicate that the use of volatile anesthetic agents may protect against the consequences of ischemia-reperfusion injury.

The effects on postoperative morbidity and mortality however remain to be determined. The results of recent meta-analyses and multicenter studies suggest that the incidence of perioperative myocardial infarction and even mortality might be decreased with the use of volatile anesthetic regimens. However further prospective studies are necessary to definitively elucidate the potential beneficial role of volatile anesthetics on postoperative outcome.