ORGAN PROTECTION PROPERTIES OF SEVOFLURANE

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**Introduction and background**
Perioperative myocardial infarction (PMI) is associated with mortality rates of up to 40%. Non-fatal PMI increases the risk of both cardiovascular morbidity and death in the first 6 months after major non-cardiac surgery.

**Therapeutic strategies include**
- Coronary revascularization
- Beta-blockers
- Alpha2-adrenoceptor agonists
- Aspirin
- Statins

**Cellular change during Ischemia**
- Altered membrane potential
- Altered ion distribution (++ intracellular Ca/Na)
- Cellular swelling
- Cytoskeletal disorganization
- Increased hypoxanthine
- Decreased ATP
- Decreased phosphocreatinine
- Cellular acidosis

**Manifestations of I/R injury**
- Vascular Injury and the “No Reflow” Phenomenon
- Myocardial Stunning
- Reperfusion Arrhythmias (VT, VF, idioV)
- CNS / GI I/R injury
- Multiorgan Dysfunction Syndrome

**Ischemic Preconditioning**
Exposure of tissues to brief periods of ischemia protects them from the harmful effects of prolonged I-R.
- Coronary artery bypass grafting
- Reduce liver injury undergoing hepatic resection
- Increases cellular adenosine production and confer protection by augmenting cellular energy stores and/or inhibiting leukocyte adherence

**Sevoflurane and cardio protection**
In patients undergoing CABG surgery with CPB, the cardioprotective effects of sevoflurane were clinically most apparent when it was administered throughout the operation.

**Sevoflurane and kidney protection**
Sevoflurane has direct anti-inflammatory and antinecrotic effects in vitro in a renal cell type particularly sensitive to injury following IR injury.
**Sevoflurane and liver protection**

Significant decrease in serum alanine and aspartate aminotransferase (ALT, AST) levels

Hepatic tissue blood flow (HTBF) was remarkably better in sevoflurane group

Tumor necrosis factor-α (TNF-α) and IL-1β values were lowest in sevoflurane group

**Conclusion**

- Easy titration anesthetic depth
- Low incidence adverse airway events
- Excellent bronchodilation
- Safe use above 1 MAC
- Hemodynamic stability
- Proven beneficial cardiac profile
- Rapid and predictable recovery