

# Anesthesiology

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*Gordon G. Giesbrecht*

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#### 282 Thermoregulatory Thresholds during Epidural and Spinal Anesthesia

*Makoto Ozaki, Andrea Kurz, Daniel I. Sessler, Rainer Lenhardt, Marc Schroeder, Azita Moayeri, Katherine M. Noyes, and Edda Rotheneder*

During epidural or spinal anesthesia, the sweating-to-vasoconstriction (interthreshold) range, the vasoconstriction-to-shivering range, and the sweating-to-shivering range all increased significantly.

#### 289 Epidural Anesthesia Increases Apparent Leg Temperature and Decreases the Shivering Threshold

*Thomas H. Emerick, Makoto Ozaki, Daniel I. Sessler, Kristin Walters, and Marc Schroeder*

The shivering threshold was reduced  $0.7\% \pm 0.2^{\circ}\text{C}$  by epidural anesthesia, and this reduction was associated with an apparent leg skin temperature that exceeded actual skin temperature by  $4.1 \pm 1.0^{\circ}\text{C}$  and an apparent leg tissue temperature that exceeded actual leg tissue temperature by  $2.3 \pm 0.6^{\circ}\text{C}$ .

#### 299 Influence of Chronic Angiotensin-converting Enzyme Inhibition on Anesthetic Induction

*Pierre Coriat, Christine Richer, Tomais Douraki, Carlos Gomez, Karl Hendricks, Jean-François Giudicelli, and Pierre Viars*

In hypertensive patients treated with angiotensin converting enzyme inhibitors, therapy up to the day of surgery leads to an exaggerated hypotensive response to induction of anesthesia.

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**308 Pharmacokinetics of Alfentanil after Epidural Administration: Investigation of Systemic Absorption Kinetics with a Stable Isotope Method**

*Anton G. L. Burm, Floor Haak-van der Lely, Jack W. van Kleef, Cretien J. G. M. Jacobs, James G. Bovill, Arie A. Vletter, Ria P. M. van den Heuvel, and Willem Onkenhout*

After epidural administration, alfentanil is slowly absorbed into the systemic circulation.

**316 Effect of Infusion Rate on Thiopental Dose-Response Relationships: Assessment of a Pharmacokinetic-Pharmacodynamic Model**

*W. Brooks Gentry, Tom C. Krejcie, Thomas K. Henthorn, Colin A. Shanks, Kathleen A. Howard, Dhanesh K. Gupta, and Michael J. Avram*

Thiopental dose-response relationships depend on rate of drug administration, and prediction of these relationships depends on interactions among the pharmacokinetic model,  $k_{e0}$ , and  $EC_{50}$  used in combined pharmacokinetic-pharmacodynamic models.

**325 Internal Jugular Bulb Blood Velocity as a Continuous Indicator of Cerebral Blood Flow during Open Heart Surgery**

*Hisatoshi Ohsumi, Katsuyasu Kitaguchi, Toshito Nakajima, Yoshihiko Ohnishi, and Masakazu Kuro*

Change in internal jugular bulb blood velocity was found to be a good indicator of percent change in cerebral blood flow in patients undergoing open heart surgery.

**333 Effect of Flumazenil on Recovery after Midazolam and Propofol Sedation**

*Ahmed F. Ghouri, Manuel A. Ramirez Ruiz, and Paul F. White*

The use of midazolam followed by flumazenil is an acceptable alternative to propofol for sedation during local anesthesia; however, "resedation" after discharge is an important consideration when choosing to use this technique.

**340 Long-duration, Low-flow Sevoflurane Anesthesia Using Two Carbon Dioxide Absorbents: Quantification of Degradation Products in the Circuit**

*Hirumichi Bito and Kazuyuki Ikeda*

Long-duration, low-flow sevoflurane anesthesia with either soda lime or baralyme as the carbon dioxide absorbent results in the generation of low levels of degradation products.

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**346** A Prospective, Randomized, Double-blind Comparison of Epidural and Intravenous Sufentanil Infusions

*Rafael Miguel, Ivan Barlow, Mark Morrell, John Scharf, David Sanusi, and Eugene Fu*

A continuous epidural infusion of sufentanil was found to provide similar analgesia and side effects compared to intravenously administered sufentanil.

**353** Propofol Causes a Dose-dependent Decrease in the Thermoregulatory Threshold for Vasoconstriction but Has Little Effect on Sweating

*Kate Leslie, Daniel I. Sessler, Andrew R. Bjorksten, Makoto Ozaki, Takashi Matsukawa, Marc Schroeder, and Sean Lin*

Propofol reduces the vasoconstriction threshold and increases the interthreshold range, but leaves the sweating threshold unchanged.

**361** Deliberate Mild Intraoperative Hypothermia for Craniotomy

*Kristy Z. Baker, William L. Young, J. Gilbert Stone, Abraham Kader, Christopher J. Baker, and Robert A. Solomon*

Although deliberate mild hypothermia during craniotomy is feasible, complete intraoperative rewarming is often difficult to achieve and may be followed by rebound hyperthermia.

**368** Postoperative Epidural Bupivacaine-Morphine Therapy: Experience with 4,227 Surgical Cancer Patients

*Oscar A. de Leon-Casasola, Brian Parker, Mark J. Lema, Patricia Harrison, and Jacqueline Massey*

Continuous epidural bupivacaine-morphine infusions were used for postoperative analgesia in surgical wards with low incidence of side effects.

**376** Echocardiographic and Hemodynamic Indexes of Left Ventricular Preload in Patients with Normal and Abnormal Ventricular Function

*Albert T. Cheung, Joseph S. Savino, Stuart J. Weiss, Stanley J. Aukburg, and Jesse A. Berlin*

Both transesophageal echocardiography and hemodynamic indexes of left ventricular preload effectively detected and quantified directional changes in left ventricular function produced by acute blood loss in patients with normal left ventricular function and in patients with left ventricular wall motion abnormalities who were anesthetized for coronary artery bypass grafting.

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**388 Neuromuscular Effects of Rocuronium Bromide and Mivacurium Chloride Administered Alone and in Combination**

*Mohamed Naguib*

Isobolographic and clinical studies demonstrated a synergistic interaction with respect to the neuromuscular blocking effects of combinations of equi-effective doses of rocuronium and mivacurium, and one of the combinations results in rocuronium's rapid onset combined with mivacurium's short duration of action.

**396 Effects of Nitrous Oxide on Human Regional Cerebral Blood Flow and Isolated Pial Arteries**

*Peter Reinstrup, Erik Ryding, Lars Algotsson, Leif Berntman, and Tore Uski*

Measurements of cerebral blood flow, using single photon emission computer-aided tomography, during nitrous oxide inhalation suggest that nitrous oxide increases metabolism in selected brain areas.

**403 The Electroencephalogram Does Not Predict Depth of Isoflurane Anesthesia**

*Rory C. Dwyer, Ira J. Rampil, Edmond I. Eger II, and Henry L. Bennett*

The computer-processed electroencephalogram does not predict depth of anesthesia as defined by movement after surgical incision, motor response to command, or memory of factual information.

**410 Critical Respiratory Events in the Postanesthesia Care Unit: Patient, Surgical, and Anesthetic Factors**

*D. Keith Rose, Marsha M. Cohen, Dan F. Wigglesworth, and Don P. DeBoer*

After controlling for patient and surgical factors, variables related to the intraoperative anesthetic management were identified as having an important role in the etiology of a critical respiratory event in the postanesthesia care unit.

**■ LABORATORY INVESTIGATIONS**

**419 Oral Dexmedetomidine Preserves Baroreceptor Function and Decreases Anesthetic Requirements of Halothane-anesthetized Dogs**

*Anton Devcic, William T. Schmeling, John P. Kampine, and David C. Wartier*

Baroreflex responses are preserved by dexmedetomidine during halothane anesthesia possibly *via* an anesthetic sparing action.

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**431** Evidence for Direct Actions of General Anesthetics on an Ion Channel Protein: A New Look at a Unified Mechanism of Action

*James P. Dilger, Ana Maria Vidal, Hiren I. Mody, and Yi Liu*

The diverse effects of ether, isoflurane, and propofol on acetylcholine receptor channels are readily interpreted in terms of a single mechanism in which anesthetics interact directly with the channel protein.

**443** Vasodilation and Mechanism of Action of Propofol in Porcine Coronary Artery

*Takao Yamanoue, Jose M. Brum, and Fawzy G. Estafanous*

In isolated porcine coronary artery rings, propofol had unspecific calcium-blocking activity that may affect different vasoactive mechanisms.

**452** Volatile Anesthetics Decrease Peristalsis in the Guinea Pig Ureter

*Christopher J. Young, Anoja Attele, Alicia Toledano, Ramon Núñez, and Jonathan Moss*

The commonly used volatile anesthetic agents strongly decrease the frequency of ureteral peristalsis in a dose-dependent manner.

**459** Activation of the Ca<sup>2+</sup> Release Channel of Cardiac Sarcoplasmic Reticulum by Volatile Anesthetics

*Timothy J. Connelly and Roberto Coronado*

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**470** Dextromethorphan Inhibits Ischemia-induced *c-fos* Expression and Delayed Neuronal Death in Hippocampal Neurons

*Paula M. Bokesch, James E. Marchand, Christopher S. Connelly, W. Heinrich Wurm, and Richard M. Kream*

Pretreatment with the antitussive agent dextromethorphan before global forebrain ischemia in the gerbil inhibits *c-fos* induction and delays neuronal degeneration.

**478** A Model for Fatal Halothane Hepatitis in the Guinea Pig

*Richard C. Lind, A. Jay Gandolfi, and Pauline de la M. Hall*

Depletion of liver glutathione in guinea pigs before inhaling either 0.25%, 0.50%, or 1.0% halothane with 40% O<sub>2</sub> for 4 h leads to the development of fatal submassive to massive hepatic necrosis in more than 40% of the animals.

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