

# Anesthesiology

*The Journal of the American Society of Anesthesiologists, Inc.*

## CONTENTS

### 27A ■ HIGHLIGHTS

#### ■ EDITORIAL VIEWS

#### 1161 Spinal Cord as a Site of Anesthetic Action

*Joan J. Kendig*

#### ■ CLINICAL INVESTIGATIONS

#### 1163 Epidural Clonidine Treatment for Refractory Reflex Sympathetic Dystrophy

*Richard L. Rauck, James C. Eisenach, Kyle Jackson, Larry D. Young, and Joan Southern*

Epidural clonidine was found effective at doses of 300  $\mu$ g and 700  $\mu$ g and by continuous infusion when administered to patients with reflex sympathetic dystrophy who were refractory to standard treatments.

#### 1170 Use of the Electrosinogram for Predicting Harmful Spinal Cord Ischemia during Repair of Thoracic or Thoracoabdominal Aortic Aneurysms

*Klaus-Dieter Stühmeier, Klaus Grabitz, Bernd Mainzer, Wilhelm Sandmann, and Jörg Tarnow*

Use of the electrosinogram may be useful for predicting harmful spinal cord ischemia during repair of thoracic or thoracoabdominal aortic aneurysms.

#### 1177 Propofol Depresses the Hypoxic Ventilatory Response during Conscious Sedation and Isohypercapnia

*Robert T. Blouin, Harry A. Seifert, H. Daniel Babenco, Pattilyn F. Conard, and Jeffrey B. Gross*

When administered in subanesthetic doses, propofol causes an 80% decrease in the ventilatory response to hypoxia in healthy volunteers.

#### 1183 The Interactions of Midazolam and Flumazenil on Human Memory and Cognition

*M. M. Ghoneim, Robert I. Block, S. T. Sum Ping, H. M. El-Zahaby, and James V. Hinrichs*

Flumazenil reverses both the sedative and the memory effects of midazolam without adverse effects, re sedation, or intrinsic actions of its own.

*Continued on page 11A*

## CONTENTS

### 1193 Naloxone, Meperidine, and Shivering

*Martin Kurz, Kumar G. Belani, Daniel I. Sessler, Andrea Kurz, Merlin D. Larson, Marc Schroeder, and Don Blanchard*

Relatively low-dose naloxone ( $0.5 \mu\text{g} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ ) only partially prevented the antishivering action of meperidine (1 mg/kg), whereas high-dose naloxone (a bolus of 11.5  $\mu\text{g}/\text{kg}$  followed by an infusion at  $5 \mu\text{g} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ ) largely prevented the effect; these data are consistent with an antishivering action of meperidine mediated by kappa receptors.

### 1202 Determinants of Catecholamine and Cortisol Responses to Lower Extremity Revascularization

*Michael J. Breslow, Stephen D. Parker, Steven M. Frank, Edward J. Norris, Helen Yates, Hershel Raff, Peter Rock, Rose Christopherson, Brian A. Rosenfeld, Charles Beattie, and The PIRAT Study Group*

Though postoperative increases in catecholamines are affected by anesthetic/analgesic management, patient factors appear to be equally important in determining the magnitude of the sympathetic response to surgery; adrenocortical responses do not parallel sympathoadrenal responses.

### 1210 Anesthetic and Obstetric Outcome in Morbidly Obese Parturients

*David D. Hood and David M. Dewan*

Epidural anesthesia is difficult but feasible for morbidly obese parturients who also are at high risk for cesarean section.

### 1219 Does the Choice of Local Anesthetic Affect the Catecholamine Response to Stress during Epidural Anesthesia?

*Rom A. Stevens, David Beardsley, J. Lee White, Tzu-Cheg Kao, Paul J. Teague, and Loren Spitzer*

Extensive lumbar epidural analgesia with 2% lidocaine did not block the catecholamine response to stress as seen with 0.75% bupivacaine and 3% 2-chloroprocaine.

### 1227 Hypnotic and Anesthetic Interactions between Ketamine and Midazolam in Female Patients

*W. Hong, T. G. Short, and T. W. C. Hui*

Interactions between ketamine and midazolam when combined for anesthesia induction were studied at endpoints of loss of response to verbal command and suppression of movement to a noxious stimulus.

## CONTENTS

**1233** Ventilation, Thermal Noise, and Errors in Cardiac Output Measurements after Cardiopulmonary Bypass

*Terry W. Latson, Charles W. Whitten, and David O'Flaherty*

The amplitude of respiratory variations in pulmonary artery blood temperature is increased significantly in many patients after cardiopulmonary bypass, and these variations in blood temperature may cause significant errors in thermodilution cardiac output measurements.

### ■ LABORATORY INVESTIGATIONS

---

**1244** Exaggerated Anesthetic Requirements in the Preferentially Anesthetized Brain

*Joseph F. Antognini and Kevin Schwartz*

When isoflurane is preferentially delivered to the brain, anesthetic requirements increased 250%, suggesting that, during anesthesia, subcortical structures are important to suppressing purposeful movement in response to painful stimuli.

**1250** Effects of Epidural and Systemic Lidocaine on Sympathetic Activity and Mesenteric Circulation in Rabbits

*Quinn H. Hogan, Anna Stadnicka, Thomas A. Stekiel, Zeljko J. Bosnjak, and John P. Kampine*

Extensive epidural anesthesia in rabbits produces splanchnic venodilation and a marked decrease in splanchnic sympathetic activity.

**1261** Halothane and Temperature Interact to Increase Succinylcholine-induced Jaw Contracture in the Rat

*R. J. Storella, M. M. Keykhah, and H. Rosenberg*

In rats anesthetized with halothane, but not pentobarbital, mild hyperthermia greatly increases the succinylcholine-induced contracture of jaw muscles.

**1266** Electromechanical Association in Regionally Stunned Swine Myocardium

*Seiji Watanabe and Charles W. Buffington*

Reduced electrical potentials accompany impaired myocardial contraction following ischemia and reperfusion in pigs.

**1278** Methylprednisolone Increases Sensitivity to  $\beta$ -Adrenergic Agonists within 48 Hours in Basenji Greyhounds

*Russell A. Sauder, W. Casey Lenox, Joseph D. Tobias, and Carol A. Hirshman*

Methylprednisolone administration increased sensitivity to the  $\beta$ -adrenergic agonist albuterol within 48 h.

## CONTENTS

- 1284** Mechanism of the Direct, Negative Inotropic Effect of Etomidate in Isolated Ferret Ventricular Myocardium  
*Maria Mattheussen and Philippe R. Housmans*  
 Etomidate causes a small decrease in myocardial contractility by reducing intracellular Ca<sup>++</sup> availability.
- 1296** Halothane-induced Cytotoxicity to Rat Centrilobular Hepatocytes in Primary Culture Is Not Increased under Low Oxygen Concentration  
*E. Wodey, A. Fautrel, M. Rissel, M. Tanguy, A. Guillouzo, and Y. Malledant*  
 Increased halothane reductive biotransformation induced by decreasing oxygen concentration does not enhance cellular damage in rat centrilobular hepatocytes *in vitro*.
- 1304** Anesthetics and Automaticity of Dominant and Latent Pacemakers in Chronically Instrumented Dogs: I. Methodology, Conscious State, and Halothane Anesthesia: Comparison with and without Muscarinic Blockade during Exposure to Epinephrine  
*Harvey J. Woehlick, Martin N. Vicenzi, Zeljko J. Bosnjak, and John L. Atlee III*  
 Epinephrine-induced atrial dysrhythmias in dogs require an intact vagus, and halothane further sensitizes the heart to these dysrhythmias.
- 1316** Anesthetics and Automaticity of Dominant and Latent Pacemakers in Chronically Instrumented Dogs: II. Effects of Enflurane and Isoflurane during Exposure to Epinephrine with and without Muscarinic Blockade  
*Martin N. Vicenzi, Harvey J. Woehlick, Zeljko J. Bosnjak, and John L. Atlee III*  
 Enflurane but not isoflurane produces direct atrial myocardial sensitization to epinephrine in chronically instrumented dogs.
- 1324** Regulation of Acute Phase Gene Expression Following Surgery and Endotoxin Administration in the Anesthetized Pig  
*Kaori Maeda, Luke O. Schoeniger, Masahiko Shimada, Richard A. Winchurch, Timothy G. Buchman, and James L. Robotham*  
 Application of molecular biologic techniques to investigate the effects of acute surgical stress is illustrated by the observation of maximal hepatic gene expression of the classically recognized acute phase response within 2.5 h without the presence of its putative inducers, TNF or IL-6, in intact anesthetized pigs.

## CONTENTS

### 1338 Effects of Inhalational Anesthetics on Biochemical Events in Growing Neuronal Tips

*Shigeru Saito, Tatsushi Fujita, and Michihiro Igarashi*

Exposure to anesthetics during the neonatal period influences the protein phosphorylation in the rat growth cone, or developing neural tip, by interference with protein kinase C.

### 1348 Effect of Sevoflurane on Hypoxic Pulmonary Vasoconstriction in the Perfused Rabbit Lung

*Yuichi Ishibe, Xiaoping Gui, Hiroshi Uno, Yasuhiro Shiokawa, Takashi Umeda, and Keita Suekane*

Sevoflurane and isoflurane equipotently inhibited hypoxic pulmonary vasoconstriction in a dose-related manner *in vitro* in rabbit lung, and cyclooxygenase products did not mediate HPV inhibition caused by sevoflurane.

## ■ MEDICAL INTELLIGENCE ARTICLE

---

### 1354 Role of the Endocardial Endothelium in the Regulation of Myocardial Function: Physiologic and Pathophysiologic Implications

*Stefan G. De Hert, Thierry C. Gillebert, Luc J. Andries, and Dirk L. Brutsaert*

## ■ ANESTHESIOLOGY SYMPOSIUM

---

### 1367 The Control of Vascular Tone: Introductory Comments

*Gary R. Strichartz and James L. Robotham*

### 1368 Integration of Factors Controlling Vascular Tone: Overview

*Geoffrey Burnstock*

### 1381 Endothelium, Anesthetics, and Vascular Control

*Roger A. Johns*

### 1392 Ion Channels in Vascular Smooth Muscle: Physiology and Pharmacology

*Zeljko J. Bosnjak*

### 1402 Overall Systems Analysis of the Carotid Sinus Baroreceptor Reflex Control of the Circulation

*Artin A. Shoukas*

*Continued on page 19A*

## CONTENTS

### ■ LABORATORY REPORT

---

- 1413** Comparing the Costs of Inhaled Anesthetics  
*Richard B. Weiskopf and Edmond I. Eger II*

### ■ CASE REPORTS

---

- 1419** Transfusion-associated Graft-*Versus*-Host Disease Caused by Leukocyte-filtered Stored Blood  
*Hideaki Hayashi, Tatsuya Nishiuchi, Hidetoshi Tamura, and Kiyoshi Takeda*
- 1421** Diffuse Oral Facial Cavernous Hemangioma Causing Severe Airway Obstruction after Intramuscular Ketamine  
*A. K. Baronia, C. K. Pandey, and Soma Kaushik*
- 1424** Aneurysmal Compression of the Trachea and Right Mainstem Bronchus Complicating Thoracoabdominal Aneurysm Repair  
*Randolph B. Gorman, William T. Merritt, Harry Greenspun, Peter S. Greene, and G. Melville Williams*
- 1427** Determination of Intravascular Migration of an Epidural Catheter Using the Air Technique  
*Robert T. Blouin, Steven T. Ruby, and Jeffrey B. Gross*
- 1429** Cardiopulmonary Bypass in Hereditary Angioedema  
*J. Michael Haering and Mark E. Comunale*
- 1433** Anesthesiologists' Management of Isolated Limb Perfusion with "High-dose" Tumor Necrosis Factor  $\alpha$   
*Gisli H. Sigurdsson, Bernhard Nachbur, and Ferdy J. Lejeune*

### ■ CORRESPONDENCE

---

- 1438** The Lazarus Phenomenon Re-revisited: I  
*Donald D. Koblin*
- 1438** The Lazarus Phenomenon Re-revisited: II  
*David J. Hill*
- 1439** Reply *Jack G. Bray, Jr.*
- 1439** The Proper Study of Anesthetized Humans: I  
*David O. Warner*
- 1440** The Proper Study of Anesthetized Humans: II  
*J. Gareth Jones*

## CONTENTS

- 1441** Reply *George M. Barnas, Juraj Sprung, Timothy M. Craft, John E. Williams, Ian G. Ryder, J. Amy Yun, and Colin F. Mackenzie*
- 1443** Anesthetic Requirements Decrease after  
Cardiopulmonary Bypass  
*Richard I. Hall and John Sullivan*
- 1443** Reply *Joseph F. Antognini*
- 1444** Change in Stroke Volume by Iced Temperature  
Injectate for Thermodilution Cardiac Output  
Determination  
*Leanne Groban, Eugene Y. Cheng, Anthony Mazzeo, and Michael Muzi*
- 1445** The Attending Anesthesiologist Meets the Patient  
*Audrey Shafer*
- 1445** More on Inspiratory Stridor  
*Wayne A. Pickard*
- 1446** The First Anesthetic Mixture: A Correction  
*Ray J. Defalque and A. J. Wright*
- 1447** A New, Simple Method of Measuring Physiologic  
Deadspace ( $V_{d\text{phys}}$ ) and  $V_{d\text{phys}}/V_t$  Ratio in Patients  
Whose Lungs Are Mechanically Ventilated  
*Epaminondas N. Kosmas, Marios Farmakis, Apostolos V. Papavassiliou, Athanasios Panayotou, and Stylianos Michaelides*
- 1449** Gender Bias Influences Interpretation of Research  
Results  
*Neil G. Feinglass*
- 1449** Disposable Circuit Disconnects  
*Neil G. Feinglass and Jerry A. Dorsch*
- 1450** Reply *Michael Nissen*
- 1451** Are the Data Missing?  
*John C. Drummond*
- 1451** Reply *Michael M. Todd*
- 1452** The Beveled Tracheal Tube Orifice Abutted on the  
Tracheal Wall in a Patient with Forestier's Disease  
*Hideaki Togashi, Yoshihiro Hirabayashi, Hiromasa Mitsuhata, Kazuhiko Saitoh, and Reiju Shimizu*

**CONTENTS****1453 Selective Bronchial Intubation with the Univent System  
in Patients with a Tracheostomy**

*J. Bellver, R. García-Aguado, J. De Andrés, J. C. Vallá,  
and R. Bolinches*

**1454 Hypotension after Indigo Carmine**

*H. Barrie Fairley*

**1455 ■ ACKNOWLEDGMENT****1456 ■ ANNOUNCEMENT****1457 ■ SUBJECT INDEX TO VOLUME 79****1495 ■ AUTHOR INDEX TO VOLUME 79****GUIDE FOR AUTHORS**

The Guide for Authors is published in the January and July issues. Please refer to the Guide for the preparation of any material for submission to ANESTHESIOLOGY.

*ANESAV is a code word ("coden") used by the Chemical Abstract Service to identify the journal.*