# Anesthesiology

The Journal of the American Society of Anesthesiologists, Inc.

#### CONTENTS

- 7A THIS MONTH IN ANESTHESIOLOGY
- 27A HIGHLIGHTS

#### EDITORIAL VIEWS

1 Snails, Spiders, and Stereospecificity—Is There a Role for Calcium Channels in Anesthetic Mechanisms?

Carl Lynch III and Joseph J. Pancrazio

#### CLINICAL INVESTIGATIONS

6 Lower-extremity Motor Neuropathy Associated with Surgery Performed on Patients in a Lithotomy Position Mark A. Warner, John T. Martin, Darrell R. Schroeder, Kenneth P. Offord, and Christopher G. Chute

Prolonged duration in a lithotomy position and various patient characteristics, especially very thin body habitus and smoking in the preoperative period, are associated with the development of lower extremity motor neuropathies after procedures performed upon patients in a lithotomy position.

13 Hearing Acuity of Anesthesiologists and Alarm Detection Mark S. Wallace, Michael N. Ashman, and M. Jane Matjasko

Measurement of hearing thresholds of anesthesiologists shows that high-frequency alarms may go undetected.

29 Factors Associated with Back Pain after Childbirth

Terrance W. Breen, Bernard J. Ransil, Philippa A. Groves, and Nancy E. Oriol

New onset postpartum back pain appears to be associated with greater weight and shorter stature, while epidural anesthesia for labor and delivery is not a statistically significant factor.

35 Onset of Action of Mivacurium Chloride: A Comparison of Neuromuscular Blockade Monitoring at the Adductor Pollicis and the Orbicularis Oculi

Samuel C. Sayson and Paul D. Mongan

Using mivacurium chloride, a 95% twitch height depression at the orbicularis oculi muscle was achieved 3 min earlier than at the more commonly monitored adductor pollicis and predicted comparable intubating conditions.

43 Effect of Prophylactic Bronchodilator Treatment on Lung Resistance after Tracheal Intubation

Hae-Keum Kil, G. Alec Rooke, Margaret A. Ryan-Dykes, and Michael J. Bishop

Inhaled ipratropium bromide or inhaled albuterol resulted in lower lung resistance after tracheal intubation when compared with treatment with an inhaled placebo.

49 Influence of Phenylephrine Bolus Administration on Left Ventricular Filling Dynamics in Patients with Coronary Artery Disease and Patients with Valvular Aortic Stenosis

Axel W. Goertz, Karl H. Lindner, Wolfram Schütz, Uwe Schirmer, Michael Beyer, and Michael Georgieff

Intravenous phenylephrine bolus administration alters left ventricular filling in patients with coronary artery disease but not in those with valvular aortic stenosis.

59 Cumulative Characteristics of Atracurium and Vecuronium: A Simultaneous Clinical and Pharmacokinetic Study

Peter M. C. Wright, Paul Hart, Marie Lau, Manohar L. Sharma, Larry Gruenke, and Dennis M. Fisher

Based on pharmacokinetic/pharmacodynamic modeling used to examine differences in the cumulative effects of atracurium and vecuronium, cumulative effects of vecuronium appear to result from its active metabolite, 3-desacetylvecuronium.

69 Which Is the Best Way to Determine Oropharyngeal Classification and Mandibular Space Length to Predict Difficult Laryngoscopy?

Marc Lewis, Shahin Keramati, Jonathan L. Benumof, and Charles C. Berry

Tests used to assess the airway should be performed while the patient is sitting with the head extended and the tongue out with phonation.

76 Bedside Assessment of Intravascular Volume Status in Patients Undergoing Coronary Bypass Surgery

Andreas Hoeft, Bernd Schorn, Andreas Weyland, Martin Scholz, Wolfgang Buhre, Egbert Stepanek, Steven J. Allen, and Hans Sonntag

A new dye dilution technique with *in vivo* fiberoptic measurement of dye curves demonstrates that extrathoracic intravascular volume is increased significantly in patients after coronary bypass surgery.

87 Plasma and Cerebrospinal Fluid Concentrations of Morphine and Morphine Glucuronides after Oral Morphine: The Influence of Renal Failure

G. D'Honneur, A. Gilton, P. Sandouk, J. M. Scherrmann, and P. Duvaldestin

Increased susceptibility to morphine in patients with renal failure may be due to progressive accumulation of morphine-6-glucuronide in cerebrospinal fluid.

94 Rapid 1% Increases of End-tidal Desflurane Concentration to Greater Than 5% Transiently Increase Heart Rate and Blood Pressure in Humans

Mark A. Moore, Richard B. Weiskopf, Edmond I. Eger II, Mimi Noorani, Lawrence McKay, and Michael Damask

Rapid 1% increases of the end-tidal desflurane concentration above 5% cause transient increases in heart rate and blood pressure.

99 Jaw Relaxation after a Halothane/Succinylcholine Sequence in Children

Raafat S. Hannallah and Richard F. Kaplan

Incomplete jaw relaxation after halothane/succinylcholine sequence is not uncommon in children and is considered a normal response.

#### LABORATORY INVESTIGATIONS

104 Isoflurane Inhibits Multiple Voltage-gated Calcium Currents in Hippocampal Pyramidal Neurons

Hobert	E. Stu	dy	

Isoflurane reversibly inhibits several calcium channel types in rat hippocampal neurons, including those thought to underlie synaptic transmitter release.

117 Insensitivity of P-Type Calcium Channels to Inhalational and Intravenous General Anesthetics

A. C. Hall, W. R. Lieb, and N. P. Franks

P-type voltage-gated calcium channels from rat cerebellar Purkinje neurons are little affected by clinically relevant concentrations of inhalational and intravenous general anesthetics.

124 Inhibition of [<sup>3</sup>H]Isradipine Binding to L-Type Calcium Channels by the Optical Isomers of Isoflurane: Lack of Stereospecificity

Eric J. Moody, Brad Harris, Paul Hoehner, and Phil Skolnick

Isoflurane stereoisomers are equipotent in their inhibition of [<sup>3</sup>H]isradipine binding to L-type calcium channels.

### 129 Lack of Stereospecific Effects of Isoflurane and Desflurane Isomers in Isolated Guinea Pig Hearts

Bernhard M. Graf, Mladen Boban, David F. Stowe, John P. Kampine, and Zeljko J. Bosnjak

Optical isomers of isoflurane and desflurane have equipotent depressant effects in the isolated guinea pig heart, suggesting a global perturbation of the membrane lipids and/or interaction with nonstereoselective sites on proteins.

### 137 L-Arginine Attenuates Ketamine-induced Increase in Renal Sympathetic Nerve Activity

Hirotsugu Okamoto, Sumio Hoka, Toshihiro Kawasaki, Tomoko Okuyama, and Shosuke Takahashi

Ketamine may act centrally to increase sympathetic outflow, and the sympathoexcitation may be attenuated by increasing nitric oxide formation with 1-arginine in the central nervous system.

### 147 Effects of Halothane and Propofol on Purified Brain Protein Kinase C Activation

Hugh C. Hemmings, Jr., and Anna I. B. Adamo

Purified brain protein kinase assayed under various conditions was found to be stimulated *in vitro* by halothane and propofol.

### 156 Direct Negative Inotropic and Lusitropic Effects of Sevoflurane

Christopher P. Harkin, Paul S. Pagel, Judy R. Kersten, Douglas A. Hettrick, and David C. Warltier

Sevoflurane causes negative inotropic and lusitropic effects that occur independently of autonomic nervous system tone in dogs.

### 168 Vecuronium Neuromuscular Blockade Reflects Liver Function during Hepatic Autotransplantation in Pigs

Jean-François Pittet, Denis R. Morel, Gilles Mentha, Corinne Schopfer, Jacques Belenger, Achille Benakis, and Edömer Tassonyi

During the progressive recovery of hepatic function in porcine liver transplantation, the rate of recovery from vecuronium-induced neuromuscular blockade shows a similar time course compared with the well established quantitative test of the liver microsomal function assessed by the metabolic excretion rate of <sup>14</sup>C-labelled aminopyrine, indicating that recording of neuromuscular transmission could serve as a continuous and easy to perform assessment of liver graft function.

# 176 Thermogenesis in Brown Adipocytes Is Inhibited by Volatile Anesthetic Agents: A Factor Contributing to Hypothermia in Infants?

Kerstin B. E. Ohlson, Nina Mohell, Barbara Cannon, Sten G. E. Lindahl, and Jan Nedergaard

Halothane inhibits the norepinephrine-induced increase in oxygen consumption of isolated brown-fat cells.

### 184 Methionine Prevents Nitrous Oxide-induced Teratogenicity in Rat Embryos Grown in Culture

Masahiko Fujinaga and Jeffrey M. Baden

Supplemental methionine but not folinic acid almost completely prevents nitrous oxide-induced teratogenicity in rat embryo grown in culture.

#### 190 Left Ventricular Mechanical Consequences of Dihydropyridine Calcium Channel Modulation in Conscious and Anesthetized Chronically Instrumented Dogs

Paul S. Pagel, Douglas A. Hettrick, and David C. Warltier

Bay k 8644 and nifedipine, a cardiac slow calcium channel agonist and antagonist, alter the effects of volatile anesthetics on left ventricular systolic and diastolic function in chronically instrumented dogs.

### 209 Nitric Oxide Does Not Mediate Coronary Vasodilation by Isoflurane

George J. Crystal, Song-Jung Kim, M. Ramez Salem, Edgard Khoury, and Juozas Gurevicius

Isoflurane-induced coronary vasodilation in dogs is not mediated by nitric oxide.

## 221 Halothane Modifies Ischemia-associated Injury to the Voltage-sensitive Calcium Channels in Canine Heart Sarcolemma

Benjamin Drenger, Yehuda Ginosar, Mucul Chandra, Ayelet Reches, and Yaacov Gozal

In vivo halothane administration during regional myocardial ischemia in canine heart has reversed ischemia-related increase in binding capacity of the voltage-sensitive calcium channels in the sarcolemma.

229 Effects of Subanesthetic Concentrations of Isoflurane and Their Interactions with Epinephrine on Acquisition and Retention of the Rabbit Nictitating Membrane Response

H. M. El-Zahaby, M. M. Ghoneim, G. M. Johnson, and I. Gormezano

Isoflurane in a dose of 0.4 MAC suppressed learning that was not substantially improved by epinephrine.

238 Inhibition of Volatile Sevoflurane Degradation Product Formation in an Anesthesia Circuit by a Reduction in Soda Lime Temperature

Jan A. Ruzicka, James C. Hidalgo, John H. Tinker, and Max T. Baker

Soda lime chilling in a low-flow anesthesia circuit containing sevoflurane inhibits the production of compound A and reduces compound B to below detectable levels.

#### LABORATORY REPORT

245 A Laboratory Comparison of Three Pulmonary Artery Oximetry Catheters

Phillip E. Scuderi, Drew A. MacGregor, David L. Bowton, and Robert L. James

#### CASE REPORTS

- 254 Thyrotoxicosis Factitia in the Anesthetized Patient Terry Ambus, Steven Evans, and N. Ty Smith
- 256 Successful Use of Inhaled Nitric Oxide for Treatment of Severe Hypoxemia in an Infant with Total Anomalous Pulmonary Venous Return

Kazufumi Okamoto, Toshihide Sato, Mitsuro Kurose, Ichiro Kukita, Hiromi Fujii, and Kenichiro Taki

#### CORRESPONDENCE

- 260 Short Circuit in the Operating Room *Alvin Wald*
- 260 Total Spinal Anesthesia during Cesarean Section Hours after Previous Unintentional Dural Puncture

  Dennis L. Wagner
- **261** The Bullard Laryngoscope and Size of the Endotracheal Tube

Tatyana Katsnelson, Erlina Farcon, Margaret Cosio, and Steven S. Schwalbe

262 A Low-cost Alternative for More Efficient Quality Assurance

Alan D. Kestenbaum and Susan Faggiani

- 264 Postanesthetic Apnea in Full-term Infants Raafat S. Hannallah, Leila G. Welborn, and Willis A. McGill
- 264 Reply Dean B. Andropoulos, Maurine B. Heard, Kristen L. Johnson, Jonathan T. Clarke, and Richard W. Rowe
- 265 Sympathetically Maintained Pain after Surgery May Be Prevented by Regional Anesthesia Eric J. Viel, Jacques Pelissier, and Jean J. Elediam
- 266 Reevaluation of Physiologic Curvature of the Thoracolumbar Spinal Column in the Supine Position Yoshihiro Hirabayashi, Reiju Shimizu, Kazuhiko Saitoh, and Hirokazu Fukuda
- 267 EMLA Cream in the Treatment of Causalgic Pain D. Mecklem and J. Brimacombe
- 269 What Is an Acceptable Preoperative Serum Potassium Level for Surgery? K. C. Wong and Richard Sperry
- 270 Industry Support of Research and Conflict of Interest Christopher J. Peterson
- 270 Motivation, Bias, and Scientific Integrity Edmond I. Eger II
- 271 Reply Lawrence J. Saidman
- 272 Is There Equivalence between Compound A and a Synthetic Olefin? Clair M. Callan

- 272 Reply Edmond I. Eger II
- 273 Head Immobilization in Eye Surgery Thomas A. Armstrong
- 275 BOOK REVIEWS

#### **GUIDE FOR AUTHORS**

The Guide for Authors is published in the January and July issues. It may be found on page 43A of this issue.