



Anesthesiology



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CONTENTS

- ◇ **THIS MONTH IN ANESTHESIOLOGY** **5A**
- Effects of Sleep Deprivation on Anesthesiologists' Performance Studied
 Plasma Concentrations Determined during Intra-Amniotic Administration of Sufentanil in Sheep
 Does Intravenous Regional Anesthesia Increase Tolerance to Tourniquet Pain? A New Model
 Exploring Hormone Mediation of Systemic and Intrathecal Effects of Morphine
- ◆ **EDITORIAL VIEWS**
-
- Opioids: More to Learn, Improvements to be Made** **1309**
Charles B. Berde, Timothy J. Brennan, and Srinivasa N. Raja
- Individual Differences in Pain Sensitivity: Implications for Treatment Decisions** **1312**
Robert C. Coghill and James C. Eisenach

- | | |
|---|--|
| ◇ | Refers to This Month in Anesthesiology |
| ◆ | Refers to Editorial Views |
| 🌐 | See Web Site enhancement |

CONTENTS



■ CLINICAL INVESTIGATIONS

- Preconditioning by Sevoflurane Decreases Biochemical Markers for Myocardial and Renal Dysfunction in Coronary Artery Bypass Graft Surgery: A Double-blinded, Placebo-controlled, Multicenter Study** **1315**

Karine Julier, Rafaela da Silva, Carlos Garcia, Lukas Bestmann, Philippe Frascarolo, Andreas Zollinger, Pierre-Guy Chassot, Edith R. Schmid, Marko I. Turina, Ludwig K. von Segesser, Thomas Pasch, Donat R. Spahn, and Michael Zaugg

Pharmacological preconditioning with sevoflurane preserves myocardial and renal function as assessed by reduced postoperative release of brain natriuretic peptide and by attenuated postprocedural increase in cystatin C in patients undergoing coronary artery bypass graft surgery under cardioplegic arrest. Immunohistochemical analyses of human atrial samples revealed intracellular translocation of protein kinase C δ and ϵ in response to sevoflurane exposure.

- Auricular Acupressure as a Treatment for Anxiety in Prehospital Transport Settings** **1328**

Alexander Kober, Thomas Scheck, Barbara Schubert, Helmut Strasser, Burkhard Gustorff, Petra Bertalanffy, Shu-Ming Wang, Zeev N. Kain, and Klaus Hoerauf

Ambulance transport patients with minor injuries who receive auricular acupressure at relaxation points are less anxious, anticipate less pain, and are more optimistic about the outcome of their illness.

- Accelerometry of Adductor Pollicis Muscle Predicts Recovery of Respiratory Function from Neuromuscular Blockade** **1333**

Matthias Eikermann, Harald Groeben, Johannes Hüsing, and Jürgen Peters

During minimal neuromuscular blockade (train-of-four ratio of 0.8), inspiratory flow limitation and upper airway obstruction occur frequently, and extubation may put the patient at risk. Although a train-of-four ratio of unity predicts a high probability of adequate recovery from neuromuscular blockade, respiratory function can still be impaired.

CONTENTS



Terlipressin *Versus* Norepinephrine to Correct Refractory Arterial Hypotension after General Anesthesia in Patients Chronically Treated with Renin-Angiotensin System Inhibitors

1338

Gilles Boccara, Alexandre Ouattara, Gilles Godet, Eric Dufresne, Michèle Bertrand, Bruno Riou, and Pierre Coriat

Terlipressin is more effective than norepinephrine in correcting arterial hypotension refractory to ephedrine following general anesthesia in patients who have undergone carotid surgery and have been chronically treated with renin-angiotensin system inhibitors.

◇ Simulation Study of Rested *Versus* Sleep-deprived Anesthesiologists

1345

Steven K. Howard, David M. Gaba, Brian E. Smith, Matthew B. Weinger, Christopher Herndon, Shanthala Keshavacharya, and Mark R. Rosekind

Twenty-five to 30 h of sleep deprivation resulted in statistically significant differences in alertness of anesthesiologists and predisposed some to fall completely asleep during long simulated cases. There was a statistically significant progressive impairment of performance on standard psychomotor tests after a night of complete sleep deprivation. Tests of performance on clinically relevant tasks failed to demonstrate consistent significant differences between subjects when they were sleep-deprived as opposed to well rested.

Effects of Antidepressants on Function and Viability of Human Neutrophils

1356

Danja Strümper, Marcel E. Durieux, Markus W. Hollmann, Barbara Tröster, Christel G. den Bakker, and Marco A. E. Marcus

At concentrations used for local injection, antidepressants exert toxic effects on human polymorphonuclear neutrophils.

■ LABORATORY INVESTIGATIONS

Propofol Increases Phosphorylation of Troponin I and Myosin Light Chain 2 *via* Protein Kinase C Activation in Cardiomyocytes

1363

Noriaki Kanaya, Brad Gable, Paul A. Murray, and Derek S. Damron

Propofol stimulates dose-dependent phosphorylation of troponin I and myosin light chain 2 *via* a protein kinase C-dependent pathway.



CONTENTS

Temporal Summation Governs Part of the Minimum Alveolar Concentration of Isoflurane Anesthesia 1372

Robert C. Dutton, Yi Zhang, Caroline R. Stabernack, Michael J. Laster, James M. Sonner, and Edmond I Eger II

Temporal summation of nociceptive stimulation determines part of the requirement for anesthesia as defined by the minimum alveolar concentration.

Cyclooxygenase-2-dependent Superoxide Generation Contributes to Age-dependent Impairment of G Protein-mediated Cerebrovasodilation 1378

William M. Armstead

Results of this study show that G protein activation elicits cerebrovasodilation that is blunted following fluid percussion brain injury in an age-dependent manner. These data suggest that cyclooxygenase-2-dependent O₂ generation contributes to G protein activation-induced dilator impairment after the insult in an age-dependent manner.

N-Acetylcysteine Restores Isoflurane-induced Preconditioning against Myocardial Infarction during Hyperglycemia 1384

Franz Kehl, John G. Krolikowski, Dorothee Weihrauch, Paul S. Pagel, David C. Wartier, and Judy R. Kersten

Isoflurane-induced preconditioning against myocardial infarction is inhibited by hyperglycemia. The free radical scavenger *N*-acetylcysteine restores the protective effects of isoflurane during hyperglycemia *in vivo*.

Perflubron Emulsion in Prolonged Hemorrhagic Shock: Influence on Hepatocellular Energy Metabolism and Oxygen-dependent Gene Expression 1391

Markus Paxian, Hauke Rensing, Katrin Geckeis, Inge Bauer, Darius Kubulus, Donat R. Spahn, and Michael Bauer

Resuscitation with perflubron emulsion is superior to asanguineous resuscitation or stored blood after prolonged hemorrhage regarding oxygen availability and utilization by hepatocytes *in vivo*.

◇ Fetal Plasma Concentrations after Intraamniotic Sufentanil in Chronically Instrumented Pregnant Sheep 1400

Danja Strümper, Marcel E. Durieux, Wiebke Gogarten, Hugo Van Aken, Kristian Hartleb, and Marco A. E. Marcus

Intraamniotically instilled sufentanil is absorbed by the fetus and achieves significant plasma concentrations.

CONTENTS



Olprinone, a Phosphodiesterase III Inhibitor, Reduces Gut Mucosal Injury and Portal Endotoxin Level during Acute Hypoxia in Rabbits **1407**

Tomoyuki Satoh, Hiroshi Morisaki, Kimiaki Ai, Shizuko Kosugi, Michiko Yamamoto, Ryohei Serita, Yoshifumi Kotake, and Junzo Takeda

Olprinone infusion increased blood flow to the splanchnic area under acute progressive hypoxia and preserved both the functional and structural integrity of gut mucosa in rabbits.

■ **PAIN AND REGIONAL ANESTHESIA**

◆ **Relationships between Measurement of Pain Using Visual Analog Score and Morphine Requirements during Postoperative Intravenous Morphine Titration** **1415**

Frédéric Aubrun, Olivier Langeron, Christophe Quesnel, Pierre Coriat, and Bruno Riou

A VAS of 70 or greater should be considered to be indicative of severe pain. The relationship between initial VAS in the PACU and morphine requirements is not linear but follows a sigmoid curve with a plateau above 80. During intravenous morphine titration, the VAS does not markedly change until the morphine dose approaches that dose ultimately needed to obtain pain relief, when it then decreases abruptly.

◆ **Postcesarean Section Pain Prediction by Preoperative Experimental Pain Assessment** **1422**

Michal Granot, Lior Lowenstein, David Yarnitsky, Ada Tamir, and Etan Z. Zimmer

Preoperative measures of heat pain threshold and magnitude estimation of suprathreshold pain may predict the intensity of postcesarean section pain.

◇ **Bilateral Intravenous Regional Anesthesia: A New Method to Test Additives to Local Anesthetic Solutions** **1427**

Maximilian W.B. Hartmannsgruber, Sabine Plessmann, and Peter G. Atanassoff

Simultaneous bilateral intravenous regional anesthesia in volunteers using ropivacaine may allow the study of additives to local anesthetic solutions in one study session.

A Multicenter, Randomized, Controlled Trial Comparing Bupivacaine with Ropivacaine for Labor Analgesia **1431**

Stephen H. Halpern, Terrance W. Breen, David C. Campbell, Holly A. Muir, Jean Kronberg, Robert Nunn, and Gordon H. Fick

When low-dose bupivacaine was compared with low-dose ropivacaine for labor analgesia, there was no difference in obstetric or neonatal outcomes.



CONTENTS

Comparison of the Parasacral Approach and the Posterior Approach, with Single- and Double-Injection Techniques, to Block the Sciatic Nerve 1436

Philippe Cuvillon, Jacques Ripart, Pascal Jeannes, Aba Mahamat, Christophe Boisson, Joel L'Hermite, Eric Vernes, and Jean Emmanuel de La Coussaye

For posterior sciatic nerve blockade, three approaches (parasacral and Winnie's single and double injection) were assessed. The time to perform the parasacral block was less than the time to perform Winnie's double-injection block, but the success rate of the latter was higher than that of the parasacral approach.

Piriformis Syndrome: Anatomic Considerations, a New Injection Technique, and a Review of the Literature 1442

Honorio T. Benzon, Jeffrey A. Katz, Hubert A. Benzon, and Muhammad S. Iqbal

Anatomic abnormalities rarely cause piriformis syndrome. A technique of piriformis muscle and perisciatic nerve injections is described using fluoroscopy and nerve stimulator with the sacroiliac joint and the greater sciatic foramen as landmarks.

Postoperative Morphine Use and Hyperalgesia Are Reduced by Preoperative but Not Intraoperative Epidural Analgesia: Implications for Preemptive Analgesia and the Prevention of Central Sensitization 1449

Joel Katz, Lorenzo Cohen, Roger Schmid, Vincent W.S. Chan, and Adarose Wowk

Preoperative administration of epidural lidocaine and fentanyl in combination with general anesthesia reduces pain and morphine consumption when compared with general anesthesia alone but is only marginally better than general anesthesia plus epidural administration of lidocaine and fentanyl after incision but before the end of surgery.

Intraspinal Adenosine Induces Spinal Cord Norepinephrine Release in Spinal Nerve-ligated Rats but Not in Normal or Sham Controls 1461

Carsten Bantel, Xinhui Li, and James C. Eisenach

Perfusion of adenosine into the spinal cord dorsal horn *via* a microdialysis probe increased norepinephrine concentrations in the microdialysates in nerve-injured but not normal animals, consistent with the concept that intrathecal adenosine relieves neuropathic pain by stimulating spinal norepinephrine release.

CONTENTS



- ◇ **Intrathecal Morphine Reduces the Visceromotor Response to Acute Uterine Cervical Distension in an Estrogen-independent Manner** **1467**
Sang-Wook Shin and James C. Eisenach
 Unlike systemic administration of morphine, which loses its efficacy to inhibit reflexes induced by noxious uterine cervical distension in rats, intrathecal administration of morphine inhibits the visceromotor reflex in an estrogen-independent manner.
- Magnesium Chloride and Ruthenium Red Attenuate the Antiallodynic Effect of Intrathecal Gabapentin in a Rat Model of Postoperative Pain** **1472**
Jen-Kun Cheng, Yu-Jun Lai, Chien-Chuan Chen, Ching-Rong Cheng, and Lih-Chu Chiou
 In a rat model of postoperative pain, the antiallodynic effect of intrathecal gabapentin was attenuated by magnesium chloride and ruthenium red, supporting that the $\alpha_2\delta$ subunit of voltage-dependent Ca^{2+} channels is involved in the antiallodynic action of intrathecal gabapentin.
- Antihyperalgesic and Side Effects of Intrathecal Clonidine and Tizanidine in a Rat Model of Neuropathic Pain** **1480**
Tomoyuki Kawamata, Keiichi Omote, Hiroki Yamamoto, Masaki Toriyabe, Kohsuke Wada, and Akiyoshi Namiki
 The antihyperalgesic dose of intrathecal clonidine and antinociceptive doses produced several side effects in a chronic constriction injury model. Intrathecal tizanidine at the dose that reversed hyperalgesia would be preferable for neuropathic pain management because of absence of hypotension and bradycardia and lower incidence of sedation.
- Assessment of Differential Blockade by Amitriptyline and Its *N*-Methyl Derivative in Different Species by Different Routes** **1484**
Peter Gerner, Anna E. Haderer, Mustafa Mujtaba, Yukari Sudoh, Sanjeet Narang, Salahadin Abdi, Venkatesh Srinivasa, Christof Pertl, and Ging Kuo Wang
 Amitriptyline and its quaternary ammonium derivative *N*-methyl amitriptyline act as a more sensory-selective local anesthetic than lidocaine or bupivacaine in sheep when given intrathecally but not in rats when given intrathecally or for sciatic nerve blockade.

CONTENTS



ECONOMICS

Variability in Surgical Caseload and Access to Intensive Care Services 1491

Michael L. McManus, Michael C. Long, Abbot Cooper, James Mandell, Donald M. Berwick, Marcello Pagano, and Eugene Litvak

When hospitals operate at high census, unnecessary day-to-day variability in scheduled surgical caseload can interfere with emergency access to intensive care units. When a significant portion of admissions arise from scheduled procedures, smoothing the surgical schedule should increase the effective capacity of crowded intensive care units and improve hospital responsiveness to new emergencies.

REVIEW ARTICLE

Effects of Postoperative, Nonsteroidal, Antiinflammatory Drugs on Bleeding Risk after Tonsillectomy: Meta-analysis of Randomized, Controlled Trials 1497

Emmanuel Marret, Antoine Flahault, Charles-Marc Samama, and Francis Bonnet

A systematic review of seven prospective, randomized, controlled trials demonstrated that the use of nonsteroidal antiinflammatory drugs after tonsillectomy increased the risk of reoperation for hemostasis.

SPECIAL ARTICLE

History of the Development and Evolution of Local Anesthesia Since the Coca Leaf 1503

Jesús Calatayud and Ángel González

This article provides a review of the history of cocaine from the sixteenth century and its role in the development of local anesthesia beginning in the nineteenth century. It includes a brief account of anesthetic instruments and techniques in the twentieth century.

CASE REPORTS

Skin Injury with the Use of a Water Warming Device 1509

Bhargavi Gali, James Y. Findlay, and David J. Plevak

Probable Meperidine-induced Serotonin Syndrome in a Patient with a History of Fluoxetine Use 1511

Todd A. Tissot

Treatment of Excessive Bleeding in Jehovah's Witness Patients after Cardiac Surgery with Recombinant Factor VIIa (NovoSeven®) 1513

Kenichi A. Tanaka, Amr A. Waly, William A. Cooper, and Jerrold H. Levy

CONTENTS



■ CORRESPONDENCE

- The Neuropsychologic Deterioration Seen in the Placebo Group May Have Been a Result of Rigorous Exclusion Criteria** **1516**
John S. Gage
- In Reply** *Stanton Newman, Robert S. Kong, John Butterworth, Wynne Aveling, David A. Stump, Michael J. G. Harrison, John Hammon, Jan Stygall, and Kashemi D. Rorie* **1516**
- Neuroprotective and Antiepileptic Activities of Ketamine in Nerve Agent Poisoning** **1517**
Georges Mion, Jean-Pierre Tourtier, Fabrice Petitjeans, Frédéric Dorandeu, Guy Lallement, and Michel Rüttimann
- In Reply** *Avi A. Weinbroum* **1517**
- Possible Dangers of Discontinuing Statins Perioperatively** **1518**
Nevin S. Kreisler
- In Reply** *Francois Forestier, Yannick Breton, Emmanuel Bonet, and Gerard Janvier* **1518**
- Acute Normovolemic Hemodilution: The Subgroup of Patients Likely To Benefit Remains Uncertain** **1519**
Claude Lentschener and Yves Ozier
- In Reply** *Idit Matot* **1519**
- Is Attenuation of Extracellular Dopamine Increase in the Nucleus Accumbens the Major Mechanism by which Dexmedetomidine Increases the Cocaine Seizure Threshold in Rats?** **1520**
Shinichi Nakao
- In Reply** *Robert A. Whittington, Laszlo Virag, and Hisayo O. Morishima* **1520**
- Gabapentin: The First Preemptive Anti-Hyperalgesic for Opioid Withdrawal Hyperalgesia?** **1520**
Burkhard Gustorff, Sibylle Kozek-Langenecker, and Hans Georg Kress
- In Reply** *Ian Gilron* **1521**

Continued on page 31A

CONTENTS



<p>Systemic Effects of Epidural Medications <i>Scott B. Groudine</i></p> <p>Need for Additional Control in Studies of Epidural Outcome <i>Michael E. Johnson</i></p> <p>Can't Blame Bupivacaine <i>Rudolph H. de Jong</i></p> <p>Postoperative Sore Throat: Due to Intubation or Reflux Disease? <i>Peter Roffey, Duraiyah Thangathurai, Maggy Riad, and Mariana Mogos</i></p> <p>Can Choice of Vasopressor Therapy Affect Rostral Spread of Spinal Anaesthetic? <i>David W. Cooper and Paul Mowbray</i></p>	<p>1522</p> <p>1522</p> <p>1523</p> <p>1523</p> <p>1524</p>
<p>■ REVIEWS OF EDUCATIONAL MATERIAL</p> <p>■ ACKNOWLEDGMENT</p> <p>■ SUBJECT INDEX TO VOLUME 98</p> <p>■ AUTHOR INDEX TO VOLUME 98</p>	<p>1525</p> <p>1527</p> <p>1532</p> <p>1558</p>

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