



◇ THIS MONTH IN ANESTHESIOLOGY 9A

◆ EDITORIAL VIEWS

**Diabetes Mellitus and Subclinical Neuropathy: A Call for New Paths in Peripheral Nerve Block Research** 361

*Brian A. Williams and Beth B. Murinson*

**Undetected Residual Neuromuscular Block Has Consequences** 363

*Aaron F. Kopman*

■ SPECIAL ANNOUNCEMENTS

**Journal-related and Other Special Activities at the 2008 American Society of Anesthesiologists Annual Meeting** 365

*Jerrold Lerman, Evan D. Kharasch, James C. Eisenach, Mark A. Warner, Vesna Jevtovic-Todorovic, Piyush M. Patel, and Lena S. Sun*

**Zeljko J. Bosnjak, Ph.D., Recipient of the 2008 Excellence in Research Award** 371

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**John H. Eisenach, M.D., Recipient of the 2008 Presidential Scholar Award** 374

*Bradly J. Narr*

■ SPECIAL ARTICLE

**We Care, Therefore We Are: Anesthesia-related Morbidity and Mortality—The 46th Rovenstine Lecture** 377

*James Edward Cottrell*

Anesthesiologists keep patients alive while surgeons do things that would otherwise kill them. Anesthesiologists need to make that known as they address concerns about anesthesia-related neonatal neuronal apoptosis, postoperative cognitive dysfunction, and exacerbation of Alzheimer disease.

■ PERIOPERATIVE MEDICINE

◆◆ **Intraoperative Acceleromyographic Monitoring Reduces the Risk of Residual Neuromuscular Blockade and Adverse Respiratory Events in the Postanesthesia Care Unit** 389

*Glenn S. Murphy, Joseph W. Szokol, Jesse H. Marymont, Steven B. Greenberg, Michael J. Avram, Jeffery S. Vender, and Margarita Nisman*

Evidence of incomplete postoperative neuromuscular recovery was commonly detected in patients randomized to intraoperative monitoring with conventional peripheral nerve stimulators, but train-of-four ratios of 0.9 or less were rarely observed in subjects randomized to acceleromyographic monitoring.

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◇ Refers to This Month in Anesthesiology

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◆ Refers to Editorial Views

- ◇ **Transmission of Pathogenic Bacterial Organisms in the Anesthesia Work Area** 399  
*Randy W. Loftus, Matthew D. Koff, Corey C. Burchman, Joseph D. Schwartzman, Valerie Thorum, Megan E. Read, Tammara A. Wood, and Michael L. Beach*  
 Anesthesiologists are a source of bacterial transmission to the anesthesia work area and patient intravenous stopcock sets.
- Observations on Surgical Demand Time Series: Detection and Resolution of Holiday Variance** 408  
*Ian C. Moore, David P. Strum, Luis G. Vargas, and David J. Thomson*  
 The authors identified periodic effects, trends, and short-term correlated effects that explained approximately 80% of the variance of a surgical demand time series with nearly half of the remaining variance attributable to specific US holidays.
- Motor and Somatosensory Evoked Potentials Are Well Maintained in Patients Given Dexmedetomidine during Spine Surgery** 417  
*Endrit Bala, Daniel I. Sessler, Dileep R. Nair, Robert McLain, Jarrod E. Dalton, and Ehab Farag*  
 Dexmedetomidine, as an anesthetic adjunct, did not have an effect on the latency or amplitude of sensory evoked potentials, while the amplitude of the transcranial motor evoked responses was too variable to declare equivalence.
- Direct Assessments of the Antioxidant Effects of Propofol Medium Chain Triglyceride/Long Chain Triglyceride on the Brain of Stroke-prone Spontaneously Hypertensive Rats Using Electron Spin Resonance Spectroscopy** 426  
*Kyo Kobayashi, Fumihiko Yoshino, Shun-Suke Takahashi, Kazuo Todoki, Yojiro Maehata, Tomoko Komatsu, Kazu-Ichi Yoshida, and Masaichi-Chang-Il Lee*  
 The current study demonstrated that propofol medium chain triglyceride/long chain triglyceride reduced high oxidative stress in the brain due to scavenging hydroxyl radical, as shown by *in vitro* or *in vivo* electron spin resonance assessment.
- Physicochemical Properties, Pharmacokinetics, and Pharmacodynamics of a Reformulated Microemulsion Propofol in Rats** 436  
*Eun-Ho Lee, Soo-Han Lee, Do-Yang Park, Kyoung-Ho Ki, Eun-Kyung Lee, Dong-Ho Lee, and Gyu-Jeong Noh*  
 The aqueous free propofol concentration of a reformulated microemulsion propofol was higher than that of long chain triglyceride emulsion propofol. Pharmacokinetics showed nonlinearity and pharmacodynamics were well represented by the electroencephalographic approximate entropy in rats.
- Using Permutation Entropy to Measure the Electroencephalographic Effects of Sevoflurane** 448  
*Xiaoli Li, Suyuan Cui, and Logan J. Voss*  
 This article proposes permutation entropy to reveal the effect of sevoflurane on brain activity in electroencephalographic recordings; the analysis showed that permutation entropy can effectively indicate the effect of sevoflurane in comparison with approximate entropy.
- Novel Ryanodine Receptor Mutation That May Cause Malignant Hyperthermia** 457  
*Alexius Kaufmann, Birgit Kraft, Andrea Michalek-Sauberer, and Lukas G. Weigl*  
 A new ryanodine receptor gene variant is described as potentially causative for malignant hyperthermia, and is characterized on the cellular and molecular levels.

Continued on page 14A

## ■ CRITICAL CARE MEDICINE

### **Low-tidal-volume Mechanical Ventilation Induces a Toll-like Receptor 4–dependent Inflammatory Response in Healthy Mice**

465

*Michiel Vaneker, Leo A. Joosten, Leo M. A. Heunks, Dirk G. Snijdelaar, Feico J. Halbertsma, Jan van Egmond, Mihai G. Netea, Johannes G. van der Hoeven, and Gert Jan Scheffer*

The inflammatory response after mechanical ventilation is at least partially Toll-like receptor 4–dependent. Increasing the understanding of the innate immune response to mechanical ventilation will possibly lead to new treatment strategies in ventilator-induced lung injury, in which Toll-like receptor 4 may serve as a therapeutic target.

## ■ PAIN MEDICINE

### ◆◆ **Guidance of Block Needle Insertion by Electrical Nerve Stimulation: A Pilot Study of the Resulting Distribution of Injected Solution in Dogs**

473

*Marcel Rigaud, Patrick Filip, Philipp Lirk, Andreas Fuchs, Geza Gemes, and Quinn Hogan*

The peripheral nerve stimulation technique for sciatic nerve localization in dogs results in needle placement close to the nerve but does not preclude intraneural injection, and such risk may be increased in subjects with hyperglycemia.

### **Electrical Impedance to Distinguish Intraneural from Extraneural Needle Placement in Porcine Nerves during Direct Exposure and Ultrasound Guidance**

479

*Ban C. H. Tsui, Jennifer J. Pillay, Kinny T. Chu, and Derek Dillane*

Electrical impedance was significantly different upon penetration of porcine sciatic nerves during open exposure and during ultrasound guidance. With further study, electrical impedance may be a quantifiable advisory to alert clinicians to intraneural needle placement.

### **Antiinflammatory Effect of Peripheral Nerve Blocks after Knee Surgery: Clinical and Biologic Evaluation**

484

*Frédéric Martin, Valéria Martinez, Jean Xavier Mazoit, Didier Bouhassira, Kamel Cherif, Marc Edouard Gentili, Philippe Piriou, Marcel Chauvin, and Dominique Fletcher*

A clinical antiinflammatory effect of combined femoral and sciatic nerve blocks is associated with analgesia and prolonged improvement of function after total knee arthroplasty.

### **Ambulatory Continuous Posterior Lumbar Plexus Nerve Blocks after Hip Arthroplasty: A Dual-center, Randomized, Triple-masked, Placebo-controlled Trial**

491

*Brian M. Ilfeld, Scott T. Ball, Peter F. Gearen, Linda T. Le, Edward R. Mariano, Krista Vandenberg, Pamela W. Duncan, Daniel I. Sessler, F. Kayser Enneking, Jonathan J. Shuster, Douglas W. Theriaque, and R. Scott Meyer*

Compared with an overnight continuous lumbar plexus block, a 4-day ambulatory continuous lumbar plexus block decreases the time to reach three predefined discharge criteria by 38% (95% confidence interval, 8–55%;  $P = 0.011$ ) after hip arthroplasty.

### **Perineural Administration of Dexmedetomidine in Combination with Bupivacaine Enhances Sensory and Motor Blockade in Sciatic Nerve Block without Inducing Neurotoxicity in Rat**

502

*Chad M. Brummett, Mary A. Norat, John M. Palmisano, and Ralph Lydic*

High-dose dexmedetomidine added to bupivacaine significantly increased the duration of sensory and motor blockade in rats. Histopathology at 24 h and 14 days revealed normal nerves.

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- Analgesic Effects of Sazetidine-A, a New Nicotinic Cholinergic Drug** 512  
*Giovanni Cucchiaro, Yingxian Xiao, Alfredo Gonzalez-Sulser, and Kenneth J. Kellar*

This study evaluates the analgesic and side effects of Sazetidine-A, a new nicotinic acetylcholine receptor ligand.

- ◇ **A118G Single Nucleotide Polymorphism of Human  $\mu$ -Opioid Receptor Gene Influences Pain Perception and Patient-controlled Intravenous Morphine Consumption after Intrathecal Morphine for Postcesarean Analgesia** 520  
*Alex T. Sia, Yvonne Lim, Eileen C. P. Lim, Rachele W. C. Goh, Hai Yang Law, Ruth Landau, Yik-ying Teo, and Ene Choo Tan*

The purpose of this study is to investigate if position 118 of the human  $\mu$ -opioid receptor polymorphism contributes to the variability in response to intrathecal morphine for postcesarean analgesia. Five hundred eighty-eight healthy women were studied. Genetic variation is associated with interindividual differences in pain scores, self-administered intravenous morphine, and the incidence of nausea postoperatively in these patients.

## ■ REVIEW ARTICLES

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- Radiofrequency Applications to Dorsal Root Ganglia: A Literature Review** 527  
*Khalid Malik and Honorio T. Benzon*

The authors conducted a literature review of radiofrequency applications to dorsal root ganglia in the treatment of pain. Although they found this technique to be relatively safe, its clinical efficacy and mechanism of action were not so clear.

- Intracarotid Delivery of Drugs: The Potential and the Pitfalls** 543  
*Shailendra Joshi, Phillip M. Meyers, and Eugene Ornstein*

Rapid advances in endovascular surgery now compel us to take a second look at intracarotid drug delivery. This review describes the principles, potential applications, and limitations of intracarotid drug delivery for diagnostic and therapeutic procedures.

## ■ CASE REPORTS

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- Application of a Newly Designed Right-sided, Double-lumen Endobronchial Tube in Patients with a Very Short Right Mainstem Bronchus** 565  
*Satoshi Hagihira, Masaki Takashina, and Takashi Mashimo*

- Abnormal Bleeding after an Oral Surgical Procedure Leading to Airway Compromise in a Patient Taking a Selective Serotonin Reuptake Inhibitor and a Nonsteroidal Antiinflammatory Drug** 568  
*Ellen M. Van Cann and Ron Koole*

## ■ CORRESPONDENCE

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- Acetaminophen-induced, Not Desflurane-induced, Hepatotoxicity** 570  
*Charles Her*

- Two Cases with Past and Family History of Febrile Convulsion Developed Seizure-like Movements during Sevoflurane Anesthesia** 571  
*Takeshi Yano, Shigeaki Okubo, Hiroaki Naruo, Tatsuma Iwasaki, Mayumi Takasaki, and Isao Tsuneyoshi*

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