



# Anesthesiology

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

*American Society of Critical Care Anesthesiologists*

*Society for Obstetric Anesthesia and Perinatology*



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| CME | CME Article                            |

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### ■ CLINICAL INVESTIGATIONS

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- CME** ♦ **Analysis of the Clinical Variables Associated with Recrudescence after Malignant Hyperthermia Reactions** **901**  
*James M. Burkman, Karen L. Posner, and Karen B. Domino*  
 Recrudescence occurred in 20% of patients after surviving a malignant hyperthermia reaction. Clinical variables associated with recrudescence included a muscular body type, a temperature increase, and a longer time between induction and malignant hyperthermia reaction.
- ♦ **Evaluating Teamwork in a Simulated Obstetric Environment** **907**  
*Pamela J. Morgan, Richard Pittini, Glenn Regehr, Carol Marrs, and Michèle F. Haley*  
 This study examined the use of a behavioral marking system and a global rating scale to determine the performance of multidisciplinary obstetric teams. The interrater reliabilities of both external ratings and self-assessments of team performance were analyzed.
- Submandible Angle in Nonobese Patients with Difficult Tracheal Intubation** **916**  
*Noriko Suzuki, Shiroh Isono, Teruhiko Ishikawa, Yuji Kitamura, Yujiro Takai, and Takashi Nishino*  
 The submandible angle was larger in patients with difficult tracheal intubation than in age- and body mass index-matched patients with easy tracheal intubation.
- 🌐 **Pharmacokinetics and Pharmacodynamics of Propofol Microemulsion and Lipid Emulsion after an Intravenous Bolus and Variable Rate Infusion** **924**  
*Kye-Min Kim, Byung-Moon Choi, Si-Won Park, Soo-Han Lee, Lane V. Christensen, Jiaye Zhou, Byung-Hoon Yoo, Hye-Won Shin, Kyun-Seop Bae, Steven E. Kern, Sung-Hong Kang, and Gyu-Jeong Noh*  
 The efficacy and safety of Aquafol (Daewon Pharmaceutical Co., Ltd., Seoul, Korea), a microemulsion formulation of propofol, were not different from those of Diprivan® (AstraZeneca, London, United Kingdom).

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- ◇ **Early Reversal of Profound Rocuronium-induced Neuromuscular Blockade by Sugammadex in a Randomized Multicenter Study: Efficacy, Safety, and Pharmacokinetics** **935**

*Harald J. Sparr, Karel M. Vermeyen, Anton M. Beaufort, Henk Rietbergen, Johannes H. Proost, Vera Saldien, Corinna Velik-Salchner, J. Mark K. H. Wierda*

In this study, sugammadex safely reversed profound neuromuscular block induced by 0.6 mg/kg rocuronium in a dose-dependent manner in male patients undergoing surgery.

- ◇ **Response to Recruitment Maneuver Influences Net Alveolar Fluid Clearance in Acute Respiratory Distress Syndrome** **944**

*Jean-Michel Constantin, Sophie Cayot-Constantin, Laurence Roszyk, Emmanuel Futier, Vincent Sapin, Bernard Dastugue, Jean-Etienne Bazin, and Jean-Jacques Rouby*

In patients with acute respiratory distress syndrome, alveolar fluid clearance is impaired and influenced by the recruitment maneuver: Resulting lung recruitment promotes net alveolar fluid clearance, whereas lung overinflation further impairs alveolar fluid clearance.

- Scopolamine Prevents Dreams during General Anesthesia** **952**

*Adelchi Toscano, Carlo Pancaro, and Vito Aldo Peduto*

Dreaming is strongly decreased in healthy women receiving scopolamine before undergoing general anesthesia, but is not decreased by atropine administration.

■ **LABORATORY INVESTIGATIONS**

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- Myocardial Depressant Effects of Desflurane: Mechanical and Electrophysiologic Actions *In Vitro*** **956**

*Wyun Kon Park, Myung Hee Kim, Duck Sun Ahn, Jee Eun Chae, Young Seok Jee, Namsik Chung, and Carl Lynch III*

The direct myocardial depressant effect of desflurane seems to be caused in part by depression of  $Ca^{2+}$  current entering through the cardiac membrane, whereas depolarization-activated sarcoplasmic reticulum  $Ca^{2+}$  release is modestly depressed. A major electrophysiologic effect of desflurane is depression of the delayed outward  $K^{+}$  current, which underlies the increased action potential duration.

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**Molecular Interaction of Droperidol with Human *Ether-a-go-go*-related Gene Channels: Prolongation of Action Potential Duration without Inducing Early Afterdepolarization** **967**

*Alexander P. Schworer, Carmen Blütner, Sven Brandt, Stephan Binder, Cornelia C. Siebrands, Heimo Ehmke, and Patrick Friederich*

Droperidol is a high-affinity blocker of human *ether-a-go-go*-related gene channels. The mode of interaction induces action potential prolongation without inducing early afterdepolarizations.

◇ **A Comparison of Epinephrine Only, Arginine Vasopressin Only, and Epinephrine Followed by Arginine Vasopressin on the Survival Rate in a Rat Model of Anaphylactic Shock** **977**

*Pascale Dewachter, Isabelle Raëth-Fries, Valérie Jouan-Hureaux, Patrick Menu, Claude Vigneron, Dan Longrois, and Paul Michel Mertes*

The authors demonstrate that in a model of anaphylactic shock in anesthetized Brown Norway rats, treated within 5 min after onset of shock, survival is 84% with epinephrine alone (bolus followed by continuous infusion) or with epinephrine bolus followed by arginine vasopressin continuous infusion (100%). In sharp contrast, arginine vasopressin only (bolus followed by continuous infusion) was associated with 100% mortality.

**Isoflurane Activates Sarcolemmal Adenosine Triphosphate-sensitive Potassium Channels in Vascular Smooth Muscle Cells: A Role for Protein Kinase A** **984**

*Katsuya Tanaka, Takashi Kawano, Akiyo Nakamura, Hossein Nazari, Shinji Kawahito, Shuzo Oshita, Akira Takahashi, and Yutaka Nakaya*

Isoflurane activates sarcolemmal adenosine triphosphate-sensitive potassium channels in a protein kinase A-dependent manner in native rat vascular smooth muscle cells. The effects of isoflurane on the cloned equivalent of this channel comprising the sulfonylurea receptor 2B and the inward rectifier 6.1 subunit provided evidence that protein kinase A-mediated phosphorylation of both the sulfonylurea receptor 2B and the inward rectifier 6.1 subunit plays a pivotal role in isoflurane-induced channel activation.

■ **PAIN AND REGIONAL ANESTHESIA**

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◆ **A Prospective, Randomized Comparison between Ultrasound and Nerve Stimulation Guidance for Multiple Injection Axillary Brachial Plexus Block** **992**

*Andrea Casati, Giorgio Danelli, Marco Baciarello, Maurizio Corradi, Stefania Leone, Simone Di Cianni, and Guido Fanelli*

Comparing nerve stimulation and ultrasound guidance for multiple injection axillary brachial plexus blockade, this prospective, randomized, blinded study showed that ultrasound guidance provided similar success rates and comparable incidence of complication as compared with nerve stimulation guidance, whereas the reduced number of needle passes required to complete the block reduced the proportion of patients reporting procedure-related pain.

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**A Review of Neuraxial Epidural Morbidity: Experience of More Than 8,000 Cases at a Single Teaching Hospital** **997**

*Christie M. Cameron, David A. Scott, Wendy M. McDonald, and Michael J. Davies*

Prospective data collection in 8,210 patients undergoing postoperative epidural infusions identified a 0.025% incidence of spinal hematoma and a 0.075% incidence of epidural abscess. Epidural abscess was associated with the combination of epidural insertion site infections and pyrexia. Early diagnosis with magnetic resonance imaging scanning enabled conservative treatment in all but one case.

◇ **Risk Factors for Chronic Pain after Hysterectomy: A Nationwide Questionnaire and Database Study** **1003**

*Birgitte Brandsborg, Lone Nikolajsen, Charlotte T. Hansen, Henrik Kehlet, and Troels S. Jensen*

Chronic pain in women 1 yr after hysterectomy on benign indication is studied in relation to indication for surgery, surgical procedure, and anesthesia.

**Constitutive Cyclooxygenase-2 Is Involved in Central Nociceptive Processes in Humans** **1013**

*Frédéric Martin, Dominique Fletcher, Marcel Chauvin, and Didier Bouhassira*

The administration of a clinically active dose of the cyclooxygenase-2 inhibitor parecoxib reduces significantly the nociceptive flexion RIII reflex in healthy volunteers.

**Oral Donepezil Reduces Hypersensitivity after Nerve Injury by a Spinal Muscarinic Receptor Mechanism** **1019**

*Bridgette A. Clayton, Ken-ichiro Hayashida, Steven R. Childers, Ruoyu Xiao, and James C. Eisenach*

Donepezil, a cholinesterase inhibitor currently approved for the treatment of Alzheimer dementia, reduces hypersensitivity in a rat nerve injury model of neuropathic pain without tolerance during chronic dosing and reversed by intrathecal but not peripheral muscarinic receptor antagonists, suggesting that this drug may be useful in the treatment of neuropathic pain.

**Effects of Intermittent Femoral Nerve Injections of Bupivacaine, Levobupivacaine, and Ropivacaine on Mitochondrial Energy Metabolism and Intracellular Calcium Homeostasis in Rat Psoas Muscle** **1026**

*Karine Nouette-Gaulain, Pascal Sirvent, Mireille Canal-Raffin, Didier Morau, Monique Malgat, Mathieu Molimard, Jacques Mercier, Alain Lacampagne, François Sztark, and Xavier Capdevila*

Bupivacaine, levobupivacaine, and ropivacaine were injected *via* a femoral nerve catheter over a period of 48 h in rats. Local anesthetics equally decrease adenosine triphosphate synthesis and enzyme activities of the respiratory chain. An altered sarcoplasmic reticulum calcium load and release were mainly induced by levobupivacaine infusion.

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### ■ REVIEW ARTICLE

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#### Patient-requested Neuraxial Analgesia for Labor: Impact on Rates of Cesarean and Instrumental Vaginal Delivery 1035

*Massimo Marucci, Gilda Cinnella, Gaetano Perchiazzi, Nicola Brienza, and Tommaso Fiore*

This systematic review including a meta-analysis shows that women receiving early neuraxial analgesia for pain relief are not at increased risk of operative delivery, whereas those receiving early parenteral opioid and late epidural analgesia present higher risk of instrumental vaginal delivery for nonreassuring fetal status, worse indices of neonatal wellness, and a lower quality of maternal analgesia.

### ■ SPECIAL ARTICLE

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#### A Tale of Two Paintings: Depictions of the First Public Demonstration of Ether Anesthesia 1046

*Sukumar P. Desai, Manisha S. Desai, Rosemarie Maddi, and George E. Battit*

Two paintings depict the first successful public demonstration of ether anesthesia. Robert Hinckley's *The First Operation with Ether*, 1893, and Warren and Lucia Proserpi's *Ether Day*, 1846, 2001, offer a dramatic contrast in mission, style, and desired effect.

### ■ CLINICAL CONCEPTS AND COMMENTARY

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#### Hyperoxia-induced Tissue Hypoxia: A Danger? 1051

*Ivy F. Forkner, Claude A. Piantadosi, Nicola Scafetta, and Richard E. Moon*

It has been suggested that hyperventilation induced by hyperoxia may cause hypocapnia, which in turn could cause vasoconstriction and reduced oxygen delivery to tissues. The authors examine the evidence for this suggestion and the reasons why oxygen administration is safe.

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