



## ON THE COVER:

The cover image underscores the integral role anesthesiologists play in allaying surgery-related anxiety in children. New preoperative interventions strengthen the partnership of healthcare providers, patients, and parents, thereby improving perioperative outcomes:

- Litman: Allaying Anxiety in Children: When a Funny Thing Happens on the Way to the Operating Room, p. 4
- Martin *et al.*: Changing Healthcare Providers' Behavior during Pediatric Inductions with an Empirically Based Intervention, p. 18

## THIS MONTH IN ANESTHESIOLOGY

9A

## EDITORIAL VIEWS

### Surgery and Smoking at First and Second Hand: Time to Act

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### Allaying Anxiety in Children: When a Funny Thing Happens on the Way to the Operating Room

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### **CME** Succinylcholine Should Be Avoided in Patients on Statin Therapy

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### Sleep and Anesthesia: The Histamine Connection

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### Lung Injury Prediction Models to Improve Perioperative Management: Let's Hit the Bull's-eye!

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## PERIOPERATIVE MEDICINE

### ◆ Pediatric Surgery and Parental Smoking Behavior

Yu Shi and David O. Warner

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Parents who smoke were more likely to make a quit attempt within the past 12 months if their children had surgery within that time but were not more likely to succeed in maintaining abstinence.

### ◆ Changing Healthcare Providers' Behavior during Pediatric Inductions with an Empirically Based Intervention

Sarah R. Martin, Jill MacLaren Chorney, Edwin T. Tan, Michelle A. Fortier, Ronald L. Blount, Samuel H. Wald, Nina L. Shapiro, Suzanne L. Strom, Swati Patel, and Zeev N. Kain

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This report examines the effect of a new intervention aimed at changing healthcare provider and parental behaviors when working with children in the preoperative setting. The intervention was successful at increasing rates of desired behaviors and decreasing rates of undesired behaviors.

◇ Refers to This Month in Anesthesiology

◆ Refers to Editorial Views

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**CME** CME Article

- CME** ◆ **Consequences of Succinylcholine Administration to Patients Using Statins** 28  
*Alparslan Turan, Maria L. Mendoza, Shipra Gupta, Jing You, Alexandru Gottlieb, Weihan Chu, Leif Saager, and Daniel I. Sessler*
- Succinylcholine increased plasma myoglobin concentrations more in statin users than in nonusers, although the increase was not clinically significant in either group. Plasma potassium and creatine kinase concentrations and muscle pain were similar in both groups.
- ◆ **Involvement of Tuberomamillary Histaminergic Neurons in Isoflurane Anesthesia** 36  
*Tao Luo and L. Stan Leung*
- Lesioning histaminergic tuberomamillary nucleus of rats resulted in an enhanced sensitivity to isoflurane. This effect was mimicked by intracerebroventricular administration of H1 receptor antagonist, suggesting a role of histaminergic neurons in modulating isoflurane anesthesia.
- ◇ **Independent Predictors and Outcomes of Unanticipated Early Postoperative Tracheal Intubation after Nonemergent, Noncardiac Surgery** 44  
*Satya Krishna Ramachandran, Olubukola O. Nafiu, Amir Ghaferi, Kevin K. Tremper, Amy Shanks, and Sachin Kheterpal*
- Investigators studied the incidence and predictors of unanticipated postoperative reintubation within 3 days of surgery. Data from the American College of Surgeons–National Surgical Quality Improvement Program were utilized. Predictors of unanticipated early postoperative intubation were derived using logistic regression on a derivation cohort of 222,094 patients. The incidence of unanticipated early postoperative intubation was approximately 1%. Unanticipated early postoperative intubation was an independent predictor of 30-day mortality with an adjusted odds ratio of 9.2. The authors present a validated perioperative risk class index for determining risk of unanticipated early postoperative intubation.
- ◇ **Genome-wide Association Study Using Pooled DNA to Identify Candidate Markers Mediating Susceptibility to Postoperative Nausea and Vomiting** 54  
*Piotr K. Janicki, Ryan Vealey, Jiabin Liu, Jeremiah Escajeda, Marek Postula, and Kelli Welker*
- To identify risk alleles for postoperative nausea and vomiting, the authors performed a genome-wide association study of subjects with postoperative nausea and vomiting. The authors confirmed association of one single nucleotide polymorphism with this syndrome. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*
- Effects of Volatile and Intravenous Anesthesia on the Alveolar and Systemic Inflammatory Response in Thoracic Surgical Patients** 65  
*Thomas Schilling, Alf Kozyan, Mert Senturk, Christof Huth, Annegret Reinhold, Göran Hedenstierna, and Thomas Hachenberg*
- One-lung ventilation during thoracic surgery results in an alveolar, but not a systemic, proinflammatory mediator release. Volatile anesthesia with both sevoflurane and desflurane suppresses pulmonary inflammation in contrast to intravenous anesthesia with propofol.
- A Description of Intraoperative Ventilator Management in Patients with Acute Lung Injury and the Use of Lung Protective Ventilation Strategies** 75  
*James M. Blum, Michael Maile, Pauline K. Park, Michelle Morris, Elizabeth Jewell, Ronald Dechert, and Andrew L. Rosenberg*
- Lung protective ventilation strategies reduce mortality in acute lung injury patients in the intensive care unit. This study shows patients do not receive lung protective ventilation strategies in the operating room when they have a documented case of acute lung injury.

**An Evaluation of Using Population Pharmacokinetic Models to Estimate Pharmacodynamic Parameters for Propofol and Bispectral Index in Children** 83

*Marc J. Coppens, Douglas J. Eleveld, Johannes H. Proost, Luc A. M. Marks, Jan F. P. Van Bocxlaer, Hugo Vereecke, Anthony R. Absalom, and Michel M. R. F. Struys*

To study the drug pharmacodynamics some investigators use a population pharmacokinetic model from literature to estimate a pharmacodynamic model. This method does not ensure good pharmacokinetic accuracy or informative estimates for pharmacodynamic parameters.

**Ultrasound Imaging Facilitates Spinal Anesthesia in Adults with Difficult Surface Anatomic Landmarks** 94

*Ki Jinn Chin, Anahi Perlas, Vincent Chan, Danielle Brown-Shreves, Arkadiy Koshkin, and Vandana Vaishnav*

Preprocedural ultrasound imaging facilitates the technical performance of spinal anesthesia in adult nonobstetric patients with difficult surface anatomic landmarks.

**Performance of the Pediatric-sized i-gel Compared with the Ambu AuraOnce Laryngeal Mask in Anesthetized and Ventilated Children** 102

*Lorenz G. Theiler, Maren Kleine-Brueggeney, Barbara Luepold, Franziska Stucki, Stefan Seiler, Natalie Urwyler, and Robert Greif*

This randomized, controlled study compared i-gel (Intersurgical, Wokingham, United Kingdom) and Ambu AuraOnce (Ambu A/S, Ballerup, Denmark) in 208 children. Insertion success was the same. The i-gel achieved higher seal but often needed taping to stay in place.

**Treatment with Epinephrine (Adrenaline) in Suspected Anaphylaxis during Anesthesia in Denmark** 111

*Lene H. Garvey, Bo Belhage, Mogens Krøigaard, Bent Husum, Hans-Jørgen Malling, and Holger Mosbech*

Anaphylaxis during anesthesia can be difficult to diagnose, potentially delaying treatment. First-line treatment is intravenous epinephrine starting with bolus doses of 0.01 mg.

■ CRITICAL CARE MEDICINE

◆ **Derivation and Diagnostic Accuracy of the Surgical Lung Injury Prediction Model** 117

*Daryl J. Kor, David O. Warner, Anas Alsara, Evans R. Fernández-Pérez, Michael Malinchoc, Rahul Kashyap, Guangxi Li, and Ognjen Gajic*

The authors aimed to develop a preoperative prediction model for identifying risk of postoperative acute lung injury. To obtain this aim, they developed a surgical lung injury prediction model using readily available preoperative data. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

**Effectiveness of Breathing through Nasal and Oral Routes in Unconscious Apneic Adult Human Subjects: A Prospective Randomized Crossover Trial** 129

*Yandong Jiang, Fang Ping Bao, Yafen Liang, William R. Kimball, Yanhong Liu, Warren M. Zapol, and Robert M. Kacmarek*

During general anesthesia, mouth-to-nose breathing produces larger tidal volumes than does mouth-to-mouth breathing. Additional studies are needed to establish whether using this breathing technique during emergency situations will improve patient outcomes.

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### **Hypertonic Saline Hydroxyethylstarch Restores Right Ventricular-Arterial Coupling after Normovolemic Hemodilution in Piglets** 136

*François Kerbaul, Benoît Rondelet, Vincent Bénas, Dominique Grisoli, Arnaud De Waroquier, Pierre Fesler, Thierry Fusai, and Serge Brimiouille*

Hypertonic saline hydroxyethylstarch improves right ventricular–pulmonary arterial coupling after normovolemic hemodilution in piglets, mainly because of an increase in right ventricular contractility.

## ■ PAIN MEDICINE

### **Pregabalin Suppresses Spinal Neuronal Hyperexcitability and Visceral Hypersensitivity in the Absence of Peripheral Pathophysiology** 144

*Kirsty Bannister, Shafaq Sikandar, Claudia S. Bauer, Annette C. Dolphin, Frank Porreca, and Anthony H. Dickenson*

Persistent exposure to morphine induced spinal hyperexcitability to somatic and visceral stimuli. These responses were reduced by systemic pregabalin in the absence of  $\alpha_2\delta$ -1 subunit up-regulation and peripheral pathology.

### **Regulation of Spinal Substance P Release by Intrathecal Calcium Channel Blockade** 153

*Toshifumi Takasusuki and Tony L. Yaksh*

Intrathecal N-, T-, and L-type calcium channel blockers prevent phase 2 formalin flinching in the rat, but only N-type calcium channel blocker reduces substance P release in the spinal cord dorsal horn.

### **Nonselective and NR2B-selective *N*-methyl-D-aspartic Acid Receptor Antagonists Produce Antinociception and Long-term Relief of Allodynia in Acute and Neuropathic Pain** 165

*Maarten Swartjes, Aurora Morariu, Marieke Niesters, Leon Aarts, and Albert Dahan*

In contrast with the nonselective *N*-methyl-D-aspartic acid receptor antagonists ketamine and norketamine, the NR2B-selective *N*-methyl-D-aspartic acid receptor antagonist traxoprodil causes relief of chronic pain outlasting the treatment period and without side effects during treatment.

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#### **Thoracic Epidural Analgesia and Acute Pain Management** 181

*Smith C. Manion and Timothy J. Brennan*

Thoracic epidural analgesia remains a key tool for acute pain management in selected patients. The indications, placement techniques, solutions administered, potential complications, and evidence-based outcomes for thoracic epidural analgesia in acute pain management are reviewed.

### **REVIEW ARTICLE**

#### **Antagonism of Nerve Growth Factor-TrkA Signaling and the Relief of Pain** 189

*Patrick W. Mantyh, Martin Koltzenburg, Lorne M. Mendell, Leslie Tive, and David L. Shelton*

Nerve growth factor has a distinct role in the adult compared with the developing nervous system. Therapies targeting nerve growth factor represent a new class of analgesics that may treat many types of chronic pain.

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