



◇ THIS MONTH IN ANESTHESIOLOGY

9A

◆ EDITORIAL VIEWS

Preoperative Electrocardiograms: Obsolete or Still Useful?

1205

Stefan G. De Hert

Addressing Tobacco Use in Anesthesiology Practice: A Call to Action

1207

Nancy A. Rigotti

Pleiotropic Effects of Morphine-6 β -glucuronide

1209

Jörn Lötsch

Drowning: A Cry for Help

1211

David S. Warner, Joost J. L. M. Bierens, Stephen B. Beerman, and Laurence M. Katz

■ SPECIAL ARTICLES

The Journal Club: Teaching Professionalism through Discussions Based on the History of Anesthesiology

1214

William A. Shakespeare, Douglas R. Bacon, Dale C. Smith, and Steven H. Rose

Historical articles from the peer-reviewed literature can be used to teach professionalism. Using the Physician Charter as the definition of professionalism, fundamental principles and professional responsibilities present within the article are delineated and discussed.

■ PERIOPERATIVE MEDICINE

◆◇ **Preoperative Electrocardiograms: Patient Factors Predictive of Abnormalities**

1217

Darin J. Correll, David L. Hepner, Candace Chang, Lawrence Tsen, Nathanael D. Hevelone, and Angela M. Bader

Specific cardiovascular risk factors as well as age greater than 65 yr have high sensitivity in predicting an abnormal electrocardiogram preoperatively.

◆🌐 **Feasibility of Tobacco Interventions in Anesthesiology Practices: A Pilot Study**

1223

David O. Warner, The American Society of Anesthesiologists Smoking Cessation Initiative Task Force

As a pilot project, materials promoting a simple tobacco intervention delivered by anesthesia providers were disseminated to 14 anesthesiology practices. A subsequent survey of these practices indicated that his intervention was feasible and well-accepted in these practices.

SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

Computer-based Finite Element Modeling of Insulated Tuohy Needles Used in Regional Anesthesia

1229

Meredith B. Cantrell, Warren M. Grill, and Stephen M. Klein

Computational finite element analysis was used to evaluate electrical characteristics of two differently insulated Tuohy needles. Distributions of current density and predicted patterns of nerve fiber activation differed across the two needle designs.

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◇ Refers to This Month in Anesthesiology

🌐 See Supplemental Digital Content

◆ Refers to Editorial Views

- ◆ Extraneural versus Intraneural Stimulation Thresholds during Ultrasound-guided Supraclavicular Block** 1235
Paul E. Bigeleisen, Nizar Moayeri, and Gerbrand J. Groen
 Investigators determined the minimally required stimulation threshold to elicit a motor response, outside and inside the most superficial part the brachial plexus during high-resolution, ultrasound-guided, supraclavicular block. The median stimulation threshold outside the brachial plexus was 0.60 mA and inside was 0.30 mA. Stimulation currents ≤ 0.2 mA were not observed outside the trunk in any patient. Within the limitations of this study and the use of ultrasound, a minimum stimulation current of ≤ 0.2 mA is reliable to detect intraneural placement of the needle. Furthermore, stimulation currents of >0.2 and ≤ 0.5 mA could not rule out intraneural position.
 SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT
- Pharmacological Characteristics of the Inhibition of Nondepolarizing Neuromuscular Blocking Agents at Human Adult Muscle Nicotinic Acetylcholine Receptor** 1244
Malin Jonsson Fagerlund, Michael Dabrowski, and Lars I. Eriksson
 Nondepolarizing neuromuscular blocking agents inhibit human adult muscle nicotinic acetylcholine receptors expressed in *Xenopus* oocytes by mixed mechanisms, both competitive and noncompetitive inhibition by the neuromuscular blocking agent in combination with acetylcholine.
- Impaired Upper Airway Integrity by Residual Neuromuscular Blockade: Increased Airway Collapsibility and Blunted Genioglossus Muscle Activity in Response to Negative Pharyngeal Pressure** 1253
Frank Herbstreit, Jürgen Peters, and Matthias Eikermann
 Residual neuromuscular blockade at a level that does not affect normal breathing increased airway collapsibility and blunted genioglossus muscle activity in response to negative pharyngeal pressure.
- Is the Performance of Acceleromyography Improved with Preload and Normalization? A Comparison with Mechanomyography** 1261
Casper Claudius, Lene Theil Skovgaard, and Jørgen Viby-Mogensen
 Preload increases the precision of acceleromyography, and normalization of the train-of-four values decreases bias in relation to mechanomyography. When both acceleromyography and mechanomyography are normalized, there is no significant bias between the two methods.
- Sevoflurane Preconditioning against Focal Cerebral Ischemia: Inhibition of Apoptosis in the Face of Transient Improvement of Neurological Outcome** 1271
Jean-Laurent Codaccioni, Lionel J. Velly, Chahrazad Moubarik, Nicolas J. Bruder, Pascale S. Pisano, and Benjamin A. Guillet
 The authors show that sevoflurane preconditioning afforded transient neuroprotection against focal cerebral ischemia in rats as assessed by neurological scores and infarct volumes. A more long-lasting neuroprotection was observed in terms of decreased ischemia-induced apoptosis.
- Ethyl Pyruvate Attenuates Spinal Cord Ischemic Injury with a Wide Therapeutic Window through Inhibiting High-mobility Group Box 1 Release in Rabbits** 1279
Qiang Wang, Qian Ding, Yiming Zhou, Xingchun Gou, Lichao Hou, Shaoyang Chen, Zhenghua Zhu, and Lize Xiong
 Ethyl pyruvate affords a strong protection against the transient spinal cord ischemic injury with a wide therapeutic window through inhibition of high-mobility group box 1 release.

Coagulopathy during Induced Severe Intracranial Hypertension in a Porcine Donor Model

1287

Anne Barklin, Else Tønnesen, Jørgen Ingerslev, Benny Sørensen, and Christian Fenger-Eriksen

Prospective and randomized induction of intracranial hypertension in a pig model associates with a pronounced activation of the coagulation system. Release of tissue factor may represent the main trigger of hypercoagulopathy found in these pigs.



A Model for Understanding the Impacts of Demand and Capacity on Waiting Time to Enter a Congested Recovery Room

1293

Tor Schoenmeyr, Peter F. Dunn, David Gamarnik, Retsef Levi, David L. Berger, Bethany J. Daily, Wilton C. Levine, and Warren S. Sandberg

Using queuing theory, we found a very sensitive relationship among operating room caseload, number of recovery beds, and recovery room congestion. Small changes in capacity or demand will significantly influence waiting for recovery beds.

SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

Circadian Disruption of Body Core Temperature and Rest–Activity Rhythms after General (Propofol) Anesthesia in Rats

1305

Garance Dispersyn, Laure Pain, and Yvan Touitou

Propofol anesthesia impacts the circadian time structure by disturbing body temperature and rest–activity rhythms in rats.



Anesthetic-induced Improvement of the Inflammatory Response to One-lung Ventilation

1316

Elisena De Conno, Marc P. Steurer, Moritz Wittlinger, Marco P. Zalunardo, Walter Weder, Didier Schreiber, Ralph C. Schimmer, Richard Klaghofer, Thomas A. Neff, Edith R. Schmid, Donat R. Spahn, Birgit Roth Z'graggen, Martin Urner, and Beatrice Beck-Schimmer

This study shows that sevoflurane, compared with propofol, has an immunomodulatory effect on patients undergoing one-lung ventilation. Outcome was significantly better in the sevoflurane group, with fewer complications.

Pentobarbital Dose-dependently Increases Respiratory Genioglossus Muscle Activity while Impairing Diaphragmatic Function in Anesthetized Rats

1327

Matthias Eikermann, Philipp Fassbender, Sebastian Zaremba, Amy S. Jordan, Carl Rosow, Atul Malhotra, and Nancy L. Chamberlin

Increasing pentobarbital doses decrease the amplitude of the phasic diaphragmatic electromyogram but increase phasic genioglossus electromyogram.

Approach Combining the Airway Scope and the Bougie for Minimizing Movement of the Cervical Spine during Endotracheal Intubation

1335

Ichiro Takenaka, Kazuyoshi Aoyama, Tamao Iwagaki, Hiroshi Ishimura, Yukari Takenaka, and Tatsuo Kadoya

The authors examined efficacy of the bougie on the cervical spine movement during intubation with the Airway Scope (Hoya-Pentax, Tokyo, Japan). Combination of the bougie and the Airway Scope reduced cervical movement when compared with the Airway Scope alone.

■ CRITICAL CARE MEDICINE

Experimental Ventilator-induced Lung Injury: Exacerbation by Positive End-Expiratory Pressure

1341

Jesús Villar, María Teresa Herrera-Abreu, Francisco Valladares, Mercedes Muros, Lina Pérez-Méndez, Carlos Flores, and Robert M. Kacmarek

In contrast to previous reports, the application of 10 cm H₂O of positive end-expiratory pressure during volume-controlled ventilation with a large tidal volume for 4 h in previously healthy rats does not attenuate lung injury.

Changes in Functional Residual Capacity and Lung Mechanics during Surgical Repair of Congenital Heart Diseases: Effects of Preoperative Pulmonary Hemodynamics

1348

Britta S. von Ungern-Sternberg, Ferenc Petak, Zoltan Hantos, and Walid Habre

Perioperative changes in the respiratory mechanics in children undergoing surgical repair of congenital heart diseases should be interpreted in terms of altered lung volume and preoperative pulmonary hemodynamic conditions.

■ PAIN MEDICINE

◆◆ **Morphine-6 β -glucuronide Rapidly Increases Pain Sensitivity Independently of Opioid Receptor Activity in Mice and Humans**

1356

Eveline L. A. van Dorp, Benjamin Kest, William J. Kowalczyk, Aurora M. Morariu, Amanda R. Waxman, Caroline A. Arout, Albert Dahan, and Elise Y. Sartor

Morphine-6 β -glucuronide causes hyperalgesia independent of previous or concurrent opioid receptor activity or analgesia in mice and humans; in mice, a causal role for the N-methyl-D-aspartate receptor is indicated.

Ampakine CX717 Protects against Fentanyl-induced Respiratory Depression and Lethal Apnea in Rats

1364

Jun Ren, Xiuqing Ding, Gregory D. Funk, and John J. Greer

The authors demonstrate that the Ampakine CX717, which is safe for human use, can alleviate life-threatening fentanyl-induced respiratory depression without interfering with analgesia. CX717 could potentially improve the safety margin for administering powerful analgesic agents.

Rifampin Greatly Reduces the Plasma Concentrations of Intravenous and Oral Oxycodone

1371

Tuija H. Nieminen, Nora M. Hagelberg, Teijo I. Saari, Antti Pertovaara, Mikko Neuvonen, Kari Laine, Pertti J. Neuvonen, and Klaus T. Olkkola

Rifampin reduces concentrations of intravenous and oral oxycodone and attenuates the effects of oral oxycodone.

Amitriptyline Suppresses Neuroinflammation-dependent Interleukin-10-p38 Mitogen-activated Protein Kinase-Heme Oxygenase-1 Signaling Pathway in Chronic Morphine-infused Rats

1379

Yueh-Hua Tai, Ru-Yin Tsai, Shinn-Long Lin, Chun-Chang Yeh, Jhi-Joung Wang, Pao-Luh Tao, and Chih-Shung Wong

Amitriptyline reverses morphine tolerance, at least in part, through stimulation of interleukin-10 production in microglia, thereby stimulating p38 mitogen-activated protein kinase phosphorylation and subsequently increasing heme oxygenase-1 production and then inhibiting proinflammatory cytokine production.

Continued on page 20A

■ REVIEW ARTICLES

- ◆ **Drowning: Update 2009** 1390
A. Joseph Layon and Jerome H. Modell

Since 1960 knowledge of the pathophysiology and treatment of drowning has improved. The three-fold decrease in death rate over this period also reflects improved safety measures. Epidemiology, pathophysiology, treatment, and prevention of the drowned victim are reviewed.

- Hypoxemia during One-lung Ventilation: Prediction, Prevention, and Treatment** 1402
Waheedullah Karzai and Konrad Schwarzkopf

Hypoxemia during one-lung ventilation may be prevented by using a ventilation strategy that avoids alveolar collapse while minimally impairing perfusion of the dependent lung and may be treated by using continuous positive airway pressure in the nonventilated lung.

■ CLASSIC PAPERS REVISITED

- Massive Blood Transfusions: The Impact of Vietnam Military Data on Modern Civilian Transfusion Medicine** 1412
Ronald D. Miller

This article is a revisiting of original materials published as: Miller RD, Robbin TO, Tong MJ, Barton SL: Coagulation defects associated with massive blood transfusions. *Ann Surg* 1971; 174:794-801

■ CASE REPORTS

- Mini-epidemic of Erroneous Central Venous Pressure Measurements Resulting from the Malproduction of a Specific Part of a Pressure Transducer System** 1417
Klaus Görlinger, Clemens J. Kehren, and Jürgen Peters
In Reply *Helen Reeve*

■ CORRESPONDENCE

- Intracarotid Etomidate** 1420
Lashmi Venkatraghavan and Anna Perks
In Reply *Shailendra Joshi, Phillip M. Meyers, and Eugene Ornstein*

- Electrical Nerve Stimulation and Subepineurial Staining: Not Only Mechanical Factors Count** 1421
Boris Yanovski, Bruce Ben-David, and Jacques E. Chelly
In Reply *Geza Gemes, Marcel Rigaud, and Quinn Hogan*
 SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

- Vigilance and the Drug-dependent Anesthesiologist** 1422
Peter J. Cohen

- Anesthesiologists Returning to Work after Substance Abuse Treatment**
Gregory E. Skipper and Robert L. DuPont

- Reentry after Addiction Treatment: Research or Retrain?**
Paul H. Earley and Arnold J. Berry

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Throw out the Bathwater; Keep the Baby*Jonathan D. Katz***The Quality of Care by Opioid- and Anesthetic-abusing Personnel***Andrea Torri***One Strike, You're Out: One Size Fits None***Thomas C. Specht***In Reply** *Keith H. Berge, Marvin D. Seppala, and William L. Lanier***In Reply** *Ethan O. Bryson and Jeffrey H. Silverstein***Looking Beyond Model Fidelity***Sylvain Boet, Mathew D. Bould, and Pierre A. Diemunsch***1428****A Near Miss: A Nitrous Oxide-Carbon Dioxide Mix-up Despite Current Safety Standards***Andrew E. Ellett, Justin C. Shields, Catherine Ifune, Necita Roa, and Andrea Vannucci*■ **ANESTHESIOLOGY REFLECTIONS****Draeger Pulmotor***George S. Bause***1243****Scheele's Fire Air***George S. Bause***1252****The Blundell Gravimator***George S. Bause***1416**■ **REVIEWS OF EDUCATIONAL MATERIAL****1432**■ **ERRATUM****1435**■ **ACKNOWLEDGMENT****1436**■ **CLASSIFIED ADS****1440****INSTRUCTIONS FOR AUTHORS**

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