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Ronald D. Miller

This lectureship honors Emery Andrew Rovenstine, M.D., who was a distinguished anesthesiologist, Chair of the Department of Anesthesiology, New York University Medical Center, and Director of Anesthesia, Bellevue Hospital; a founder and past president of the American Board of Anesthesiology; past president of the American Society of Anesthesiologists; and recipient of the Society’s 1957 Distinguished Service Award. The Rovenstine Lecture was established in 1962.
- ◆ **Gadgeteering for Health Care: The John W. Severinghaus Lecture on Translational Science** 721
John Wendell Severinghaus

This article traces a few examples of how translational science steadily improved the specialty of anesthesiology during the 20th century. Research during the past 60 yr has provided new tools and agents, transformed the teaching methods and content, and vastly improved the safety of anesthesia.
- ◆ **Critical Thinking in Anesthesia: Eighth Honorary FAER Research Lecture** 729
Steven L. Shafer

Scientifically based professionals must be open to new advances while rigorously rejecting meritless claims. This essay presents a taxonomy for reasoning from evidence.



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■ 2008 BEST ABSTRACTS OF THE MEETING: ANESTHESIOLOGY EDITORS' PICKS

- ◆◆ **Natriuretic Peptide System Gene Variants Are Associated with Ventricular Dysfunction after Coronary Artery Bypass Grafting** 738
Amanda A. Fox, Charles D. Collard, Stanton K. Sherman, Christine E. Seidman, Jonathan G. Seidman, Kuang-Yu Liu, Jochen D. Muehlschlegel, Tjorvi E. Perry, Sary F. Aranki, Christoph Lange, Daniel S. Herman, Thomas Meitinger, Peter Lichtner, and Simon C. Body
 Genetic variation within the NPPA/NPPB and NPR3 natriuretic peptide genes is associated with postoperative ventricular dysfunction in people of European descent undergoing primary coronary artery bypass graft surgery with cardiopulmonary bypass. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT
- ◆ **Endogenous γ -Aminobutyric Acid Modulates Tonic Guinea Pig Airway Tone and Propofol-induced Airway Smooth Muscle Relaxation** 748
George Gallos, Neil R. Gleason, Laszlo Virag, Yi Zhang, Kentaro Mizuta, Robert A. Whittington, and Charles W. Emala
 γ -Aminobutyric acid endogenously present in the airway increases in response to contractile stimuli in guinea pig upper airways. Endogenous γ -aminobutyric acid contributes a tonic prorelaxant component to the maintenance of airway smooth muscle tone.
- ◆ **Epidemiology of Anesthesia-related Mortality in the United States, 1999–2005** 759
Guohua Li, Margaret Warner, Barbara H. Lang, Lin Huang, and Lena S. Sun
 Using International Classification of Diseases, 10th Revision codes and the multiple-cause-of-death data files of the National Vital Statistics System, the authors examined the epidemiologic patterns of anesthesia-related deaths in the United States during 1999–2005.
-  **Thalamic Microinfusion of Antibody to a Voltage-gated Potassium Channel Restores Consciousness during Anesthesia** 766
Michael T. Alkire, Christopher D. Asher, Amanda M. Franciscus, and Emily L. Hahn
 An intrathalamic microinfusion of Kv1.2 potassium channel blocking antibody restores consciousness to anesthetized rats, thus raising the possibility that thalamic potassium channels play a role in mediating arousal or are relevant targets of anesthetic action. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT
- Involvement of Erythropoietin in Retinal Ischemic Preconditioning** 774
John C. Dreixler, Sarah Hagevik, Jonathan W. Hemmert, Afzhal R. Shaikh, Daniel M. Rosenbaum, and Steven Roth
 Erythropoietin was found to serve as a signaling intermediary in a model of retinal ischemic preconditioning in rats.
- ◆ **Executive Function and Depression as Independent Risk Factors for Postoperative Delirium** 781
Patrick J. Smith, Deborah K. Attix, B. Craig Weldon, Nathaniel H. Greene, and Terri G. Monk
 Although delirium is common postoperatively and is associated with significant mortality, clinical predictors among nondemented patients remain elusive. This prospective study of 998 nondemented patients demonstrates that preoperative executive dysfunction and depression independently predict delirium.

Measures of Executive Function and Depression Identify Patients at Risk for Postoperative Delirium

788

Nathaniel H. Greene, Deborah K. Attix, B. Craig Weldon, Patrick J. Smith, David L. McDonagh, and Terri G. Monk

Postoperative delirium is a serious complication associated with increased morbidity and mortality. Preoperative measures of executive function and depression are superior to measures of global cognition for identifying patients at risk for postoperative delirium.

2008 ANESTHESIOLOGY/FAER SESSION: ANESTHESIA AND THE DEVELOPING BRAIN: IMPLICATIONS FOR OBSTETRICS AND PEDIATRICS

Early Exposure to Anesthesia and Learning Disabilities in a Population-based Birth Cohort

796

Robert T. Wilder, Randall P. Flick, Juraj Sprung, Slavica K. Katusic, William J. Barbaresi, Christopher Mickelson, Stephen J. Gleich, Darrell R. Schroeder, Amy L. Weaver, and David O. Warner

The investigators studied the association between anesthetic exposure before age 4 yr and the development of learning disabilities (LD). A single exposure to anesthesia (n = 449) was not associated with an increased risk of LD (hazard ratio = 1.0, 95% confidence interval [CI], 0.79-1.27). However, children receiving two anesthetics (n = 100) or three or more anesthetics (n = 44) were at increased risk for LD (hazard ratio = 1.59, 95% CI, 1.06-2.37, and hazard ratio = 2.60, 95% CI, 1.60-4.24, respectively). The team noted they cannot determine whether anesthesia itself may contribute to LD, or whether the need for anesthesia is a marker for other unidentified factors that contribute to LD. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

Behavior and Development in Children and Age at the Time of First Anesthetic Exposure

805

Cor J. Kalkman, Linda Peelen, Karel G. Moons, Morna Veenhuizen, Marcel Bruens, Gerben Sinnema, and Tom P. de Jong

Children younger than 24 months undergoing urologic surgery had more behavioral disturbances than children who underwent first anesthesia after 2 yr. To confirm or refute an effect of anesthesia, 2,268 children need to be studied.

Inhibition of p75 Neurotrophin Receptor Attenuates Isoflurane-mediated Neuronal Apoptosis in the Neonatal Central Nervous System

813

Brian P. Head, Hemal H. Patel, Ingrid R. Niesman, John C. Drummond, David M. Roth, and Piyush M. Patel

Isoflurane-induced neuroapoptosis, reduction in filopodial spines, and reduction in synapse number was attenuated by p75 neurotrophin receptor inhibition in the hippocampus of postnatal day 5-7 mice.

Isoflurane Inhibits Growth but Does Not Cause Cell Death in Hippocampal Neural Precursor Cells Grown in Culture

826

Jeffrey W. Sall, Greg Stratmann, Jason Leong, William McKleroy, Daniel Mason, Shanti Shenoy, Samuel J. Pleasure, and Phillip E. Bickler

Isoflurane does not kill cultured hippocampal neural precursors but does inhibit growth and increase neuronal differentiation.

Isoflurane Differentially Affects Neurogenesis and Long-term Neurocognitive Function in 60-day-old and 7-day-old Rats

834

Greg Stratmann, Jeffrey W. Sall, Laura D. V. May, Joseph S. Bell, Kathy R. Magnusson, Vinuta Rau, Kavel H. Visrodia, Rehan S. Alvi, Ban Ku, Michael T. Lee, and Ran Dai

Isoflurane differentially effects neurogenesis and long-term neurocognitive function in P60 and P7 rats.

Effect of Hypercarbia and Isoflurane on Brain Cell Death and Neurocognitive Dysfunction in 7-day-old Rats 849

Greg Stratmann, Laura D. V. May, Jeffrey W. Sall, Rehan S. Alvi, Joseph S. Bell, Brandi K. Ormerod, Vinuta Rau, Joan F. Hilton, Ran Dai, Michael T. Lee, Kavel H. Visrodia, Ban Ku, Emanuel J. Zusmer, Jeremy Guggenheim, and Atoosa Firouzian

Hypercarbia causes thalamic cell death in postnatal day 7 (P7) rats that resembles isoflurane-induced cell death. Although 2 h or 4 h of isoflurane or 4 h of hypercarbia alone causes brain cell death, only 4 h of isoflurane causes a long-term neurocognitive deficit.

Lithium Protects against Anesthesia-induced Developmental Neuroapoptosis 862

Megan M. W. Straike, Chainlie Young, Davide Cattano, Catherine E. Creeley, Haihui Wang, Derek J. Smith, Stephen A. Johnson, Erin S. Li, and John W. Olney

Propofol and ketamine induce neuroapoptosis in the developing mouse brain, a toxic action that is preceded by suppression of extracellular signal-regulated kinase phosphorylation. Lithium administration prevents both anesthetic-induced suppression of extracellular signal-regulated kinase and neuroapoptosis.

■ **2008 JOURNAL SYMPOSIUM: A PRECARIOUS BREATH: DIAGNOSIS AND MANAGEMENT OF DIFFICULT AIRWAYS AND OBSTRUCTIVE SLEEP APNEA**

Identification of Patients at Risk for Postoperative Respiratory Complications Using a Preoperative Obstructive Sleep Apnea Screening Tool and Postanesthesia Care Assessment 869

Bhargavi Gali, Francis X. Whalen, Darrell R. Schroeder, Peter C. Gay, and David J. Plevak

A screening prediction model for obstructive sleep apnea generated a sleep apnea clinical score and was combined with postanesthesia care unit monitoring to identify patients at risk of postoperative oxygen desaturation and respiratory complications.

Continuous Positive Airway Pressure *via* the Boussignac System Immediately after Extubation Improves Lung Function in Morbidly Obese Patients with Obstructive Sleep Apnea Undergoing Laparoscopic Bariatric Surgery 878

Patrick J. Neligan, Guarav Malhotra, Michael Fraser, Noel Williams, Eric P. Greenblatt, Maurizio Cereda, and E. Andrew Ochroch

Bariatric patients had significantly better 24-h postoperative spirometry values when placed on the Boussignac continuous positive airway pressure system immediately after extubation compared with continuous positive airway pressure started in the recovery room.

Three-dimensional Morphological Analyses of Positional Dependence in Patients with Obstructive Sleep Apnea Syndrome 885

Hanako Saigusa, Masaaki Suzuki, Naoki Higurashi, and Kazuoki Kodera

Patients with positional obstructive sleep apnea syndrome had a smaller volume of the lateral pharyngeal wall soft tissues, backward position of the mandible relative to the maxilla, and smaller lower facial height.

Prediction and Outcomes of Impossible Mask Ventilation: A Review of 50,000 Anesthetics 891

Sachin Kheterpal, Lizabeth Martin, Amy M. Shanks, and Kevin K. Tremper

Analysis of 53,041 mask ventilation attempts demonstrated 77 cases of impossible ventilation. Nineteen patients demonstrated difficult intubation. Neck radiation changes, male sex, sleep apnea, Mallampati III/IV, and presence of beard were identified as independent predictors.

- Use of the Pentax-AWS® in 293 Patients with Difficult Airways** 898
Takashi Asai, Eugene H. Liu, Sanae Matsumoto, Yoshihiro Hirabayashi, Norimasa Seo, Akihiro Suzuki, Takashi Toi, Kazumasa Yasumoto, and Yasuhisa Okuda

Tracheal intubation with the Pentax-AWS® (Hoya Corporation, Tokyo, Japan), a new videolaryngoscope, was successful in 290 of 293 patients with difficult airways.

- Comparison of Two Insertion Techniques of ProSeal™ Laryngeal Mask Airway: Standard versus 90-degree Rotation** 905

Jung-won Hwang, Hee-Pyoung Park, Young-Jin Lim, Sang-Hwan Do, Sang-Chul Lee, and Young-Tae Jeon

The rotational technique is more successful than the standard technique and is associated with less pharyngeal mucosal trauma during the insertion of the ProSeal™ laryngeal mask airway.

■ REVIEW ARTICLES

- Obstructive Sleep Apnea of Obese Adults: Pathophysiology and Perioperative Airway Management** 908

Shiroh Isono

Improvement of the pharyngeal anatomical imbalance and maintenance of lung volume are the keys for safe perioperative airway management of obese patients with obstructive sleep apnea.

- Intermittent Hypoxia and the Practice of Anesthesia** 922

Karen A. Brown

The stimulus of intermittent hypoxia is a powerful and unique stimulus. Altered analgesic and respiratory sensitivities to opiates in children with obstructive sleep apnea have been linked to recurrent hypoxia during sleep.

- A Meta-analysis of Clinical Screening Tests for Obstructive Sleep Apnea** 928

Satya Krishna Ramachandran and Lydia A. Josephs

Clinical prediction of severe obstructive sleep apnea is possible with a high degree of accuracy. Owing to study heterogeneity, most of the screening tests will miss a significant proportion of patients with obstructive sleep apnea.

■ CASE REPORTS

- The LMA CTrach™ in Patients with Difficult Airways** 941

Eugene H. Liu, Regina Wender, and Allan J. Goldman

- Severe Retropharyngeal Abscess after the Use of a Reinforced Laryngeal Mask with a Bosworth Introducer** 943

Eoin D. Casey, Martin Donnelly, and Conan L. McCaul

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Why Was 10% Procaine Used?

Norihito Kitagawa

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Peter E. Horowitz and William M. Gild

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