



# Anesthesiology



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*American Society of Critical Care Anesthesiologists*  
*Society for Obstetric Anesthesia and Perinatology*



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**■ CLINICAL INVESTIGATIONS**


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- ◆ **Variability of Blood Glucose Concentration and Short-term Mortality in Critically Ill Patients** **244**

*Moritoki Egi, Rinaldo Bellomo, Edward Stachowski, Craig J. French, and Graeme Hart*

The SD of glucose was a significant and independent predictor of intensive care unit and hospital mortality. Its predictive value for intensive care unit mortality was greater than that of the mean glucose concentration. Decreased variability of blood glucose concentration might be an important aspect of glucose control.

- ◇ **Postoperative Infusion of Amino Acids Induces a Positive Protein Balance Independently of the Type of Analgesia Used** **253**

*Francesco Donatelli, Thomas Schrickler, Giovanni Mistraretti, Francisco Asenjo, Piervirgilio Parrella, Linda Wykes, and Franco Carli*

Amino acid infusion after colorectal surgery inhibits protein breakdown and stimulates protein synthesis, thus rendering protein balance positive regardless of the type of analgesia, although balance was greater in the patient-controlled analgesia group. The effect of amino acids on postoperative glucose metabolism was characterized by a decrease in glucose clearance indicating a state of insulin resistance and by a decrease in endogenous glucose production.

- ◇ **Development of an Objective Scoring System for Measurement of Resident Performance on the Human Patient Simulator** **260**

*Barbara M. Scavone, Michele T. Sproviero, Robert J. McCarthy, Cynthia A. Wong, John T. Sullivan, Viva J. Siddall, and Leonard D. Wade*

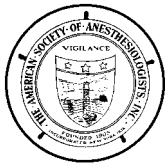
The authors developed a weighted scoring system to measure resident performance of general anesthesia for emergency cesarean delivery *via* a modified Delphi technique. They then subjected that scoring method to tests of validity and reliability.

- Opioid-Volatile Anesthetic Synergy: A Response Surface Model with Remifentanil and Sevoflurane as Prototypes** **267**

*Sandeep C. Manyam, Dhanesh K. Gupta, Ken B. Johnson, Julia L. White, Nathan L. Pace, Dwayne R. Westenskow, and Talmage D. Egan*

Remifentanil and sevoflurane interact synergistically for both sedation and analgesic endpoints as demonstrated by response surface analysis.

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### Value of Debriefing during Simulated Crisis Management: Oral *versus* Video-assisted Oral Feedback 279

*Georges L. Savoldelli, Viren N. Naik, Jason Park, Hwan S. Joo,  
Roger Chow, and Stanley J. Hamstra*

This study investigated the value of debriefing during simulation and compared the educational efficacy of two types of feedback against control: oral feedback and videotape-assisted oral feedback. The results suggest that valuable simulation training can be achieved even when video technology is not available.

### ■ LABORATORY INVESTIGATIONS

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#### ◇ Flexible Interaction Model for Complex Interactions of Multiple Anesthetics 286

*Matthew Fidler and Steven E. Kern*

This article presents a flexible interaction model for describing interactions that are asymmetric and have different isobole shapes.

#### Dual Actions of Enflurane on Postsynaptic Currents Abolished by the $\gamma$ -Aminobutyric Acid Type A Receptor $\beta_3$ (N265M) Point Mutation 297

*Berthold Drexler, Rachel Jurd, Uwe Rudolph, and Bernd Antkowiak*

Volatile anesthetics display dual actions on cortical inhibitory postsynaptic currents mediated by  $\gamma$ -aminobutyric acid type A receptors, namely a blocking and a prolonging one. In cortical neurons from mice with the (N265M) point mutation of the  $\beta_3$  subunit of the  $\gamma$ -aminobutyric acid type A receptor, both effects of enflurane are strongly diminished.

#### Reevaluation of Gray and White Matter Injury after Spinal Cord Ischemia in Rabbits 305

*Naoko Kurita, Masahiko Kawaguchi, Meiko Kakimoto, Yuri Yamamoto,  
Satoki Inoue, Mitsutoshi Nakamura, Noboru Konishi, Piyush M. Patel, and  
Hitoshi Furuya*

Spinal cord ischemia induced white matter injury as well as gray matter injury in rabbits. There was a temporal difference in the evolution of gray and white matter injury, with the former being apparent early after ischemia, whereas the latter was delayed.

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### Differential Effects of Volatile Anesthetics on M<sub>3</sub> Muscarinic Receptor Coupling to the G<sub>α<sub>q</sub></sub> Heterotrimeric G Protein 313

*Tetsuzo Nakayama, Alan R. Penheiter, Sumedha G. Penheiter, Eduardo N. Chini, Michael Thompson, David O. Warner, and Keith A. Jones*

Volatile anesthetics have differential effects on M<sub>3</sub> muscarinic receptor activation of guanosine nucleotide exchange at the α subunit of the G<sub>α<sub>q</sub></sub> heterotrimeric G protein.

#### ■ PAIN AND REGIONAL ANESTHESIA

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### Gabapentin Increases a Tonic Inhibitory Conductance in Hippocampal Pyramidal Neurons 325

*Victor Y. Cheng, Robert P. Bonin, Mary W. Chiu, J. Glen Newell, John F. MacDonald, and Beverley A. Orser*

The molecular mechanisms underlying the analgesic and anticonvulsant properties of gabapentin are not understood. This report shows that gabapentin increases a tonic inhibitory conductance generated by extrasynaptic γ-aminobutyric acid type A receptors in hippocampal pyramidal neurons *in vitro*.

### ◆ Human Opioid Receptor A118G Polymorphism Affects Intravenous Patient-controlled Analgesia Morphine Consumption after Total Abdominal Hysterectomy 334

*Wen-Ying Chou, Cheng-Haung Wang, Ping-Hsin Liu, Chien-Cheng Liu, Chia-Chih Tseng, and Bruno Jawan*

The human opioid receptor A118G polymorphism affects the amount of morphine consumption for intravenous patient-controlled analgesia after total hysterectomy.

### ◇ Anesthesia and Patients with Congenital Hyposensitivity to Pain 338

*Toby N. Weingarten, Juraj Sprung, Joel D. Ackerman, Katarina Bojanic, James C. Watson, and Peter J. Dyck*

The authors reviewed anesthetic management of seven patients with congenital hyposensitivity to pain. They found that (1) despite reduced pain perception, these patients received usual dosages of anesthetic agents for surgery; (2) they rarely needed opioids postoperatively; (3) perioperative body temperature was easily managed by adjustment of environmental temperature; and (4) anesthesia was free of any major adverse events.

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### Modifying the Baricity of Local Anesthetics for Spinal Anesthesia by Temperature Adjustment: Model Calculations 346

*Axel R. Heller, Katrin Zimmermann, Kristin Seele, Thomas Rössel, Thea Koch, and Rainer J. Litz*

Temperature adjustment of local anesthetics to body temperature has been shown to improve the predictability of the spinal anesthesia extension. Sophisticated measurements and mathematic models now allow calculation of the ideal injection temperature of local anesthetics and to even better control local anesthetic distribution in the cerebrospinal fluid.

### Thoracic Epidural Analgesia Augments Ileal Mucosal Capillary Perfusion and Improves Survival in Severe Acute Pancreatitis in Rats 354

*Hendrik Freise, Stefan Lauer, Soeren Anthonsen, Verena Hlouschek, Evgeny Minin, Lars G. Fischer, Markus M. Lerch, Hugo K. Van Aken, and Andreas W. Sielenkämper*

Continuous thoracic epidural anesthesia reduces capillary mucosal perfusion injury and improves survival in severe acute pancreatitis. Thereby, thoracic epidural analgesia may be useful to protect against microvascular injury associated with critical illness.

### Effects of Aging on Current Vocalization Threshold in Mice Measured by a Novel Nociception Assay 360

*Julia C. Finkel, Virginia G. Besch, Adrienne Hergen, John Kakareka, Thomas Pohida, Jonathan M. Melzer, Deloris Koziol, Robert Wesley, and Zenaide M. N. Quezado*

The authors used a novel nociception assay to study age-related changes in nociception and showed that over the life span of mice, current vocalization threshold to electrical stimulus has a U-shaped pattern likely to be age related. The findings support the notion that age-related changes in nociception are curvilinear and that in the study and treatment of pain, the age of subjects should be considered.

## ■ ECONOMICS

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### ◆ Statistical Process Control as a Tool for Monitoring Nonoperative Time 370

*Andreas Seim, Bjørn Andersen, and Warren S. Sandberg*

This study introduces statistical process control as a tool for assessing the performance of perioperative systems. The method detects nonrandom variation by continuous comparison of current performance against historic controls. The authors demonstrate that statistical process control quickly detects even small performance changes and is useful for long-term process monitoring.

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*Estelle Traurig Baer*

A fatal case of viridans streptococcus meningitis is reported, which occurred as a complication of epidural anesthesia. One hundred seventy-nine reported cases of post-dural puncture meningitis are reviewed. Controversy exists regarding prevention, surveillance, incidence, and treatment of this serious complication.

#### ◆🌐 Incidence of Epidural Hematoma, Infection, and Neurologic Injury in Obstetric Patients with Epidural Analgesia/Anesthesia 394

*Wilhelm Ruppen, Sheena Derry, Henry McQuay, and R. Andrew Moore*

Serious adverse events with epidurals in obstetrics and in general are rare but are especially important in young, mainly healthy women. The authors provide the best available estimates for some serious adverse events of epidurals in obstetrics.

### ■ SPECIAL ARTICLE

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#### The Entwined Mysteries of Anesthesia and Consciousness: Is There a Common Underlying Mechanism? 400

*Stuart R. Hameroff*

Mechanisms underlying both anesthesia and consciousness depend on London forces in hydrophobic pockets of coherently synchronized dendritic brain proteins.

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*William J. Mauermann and Edward C. Nemergut*

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