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- ◆◆ **Airway Changes during Labor and Delivery** 357
Bhavani-Shankar Kodali, Sobhana Chandrasekhar, Linda N. Bulich, George P. Topulos, and Sanjay Datta
There are significant airway changes in women during labor and delivery. It is prudent to reexamine the airway just before initiation of anesthesia during the intrapartum or immediate postpartum period.
- ◆ **Role of CYP2B6 in Stereoselective Human Methadone Metabolism** 363
Rheem A. Totah, Pamela Sheffels, Toni Roberts, Dale Whittington, Kenneth Thummel, and Evan D. Kharasch
Stereoselective methadone metabolism in human liver microsomes is mainly mediated by CYP2B6, and CYP2B6 seems responsible for clinical methadone metabolism and clearance. This may have implications for methadone dosing and clinical outcome.
- ◇ **Incidence and Risk Factors for Perioperative Adverse Respiratory Events in Children Who Are Obese** 375
Alan R. Tait, Terri Voepel-Lewis, Constance Burke, Amy Kostrzewa, and Ian Lewis
Anesthesiologists are now presented with a greater number of adult and pediatric patients who are significantly overweight. This prospective study examined the relationship between age adjusted body mass index, preoperative comorbidities, and perioperative outcome in children. Obese children had a significantly higher prevalence of comorbidities than nonobese children. Furthermore, obese children had a higher incidence of difficult mask ventilation, airway obstruction, major oxygen desaturation (>10% of baseline), and overall critical respiratory adverse events. Identification and awareness of risk factors for perioperative complications will be important in optimizing the anesthetic management of these children.

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📄 CME Article

- Magnitude of the Second Gas Effect on Arterial Sevoflurane Partial Pressure** 381
Philip J. Peyton, Maryam Horriat, Gavin J. B. Robinson, Robert Pierce, and Bruce R. Thompson

The second gas effect on arterial sevoflurane partial pressures is two to three times more powerful than the effect on end-expired partial pressures, because of inhomogeneity of distribution of blood flow and gas uptake in the lung.

- Quantitation of the Effect of Nitrous Oxide on Rocuronium Infusion Requirements Using Closed-loop Feedback Control** 388
Hanna Illman, Heikki Antila, and Klaus T. Olkkola

Nitrous oxide does not affect the infusion requirements of rocuronium.

■ LABORATORY INVESTIGATIONS

- ◆◆ **Autologous Transplantation of Endothelial Progenitor Cells Attenuates Acute Lung Injury in Rabbits** 392

Chen-Fuh Lam, Yen-Chin Liu, Jen-Kuo Hsu, Pei-An Yeh, Ting-Ya Su, Chien-Chi Huang, Ming-Wei Lin, Ping-Ching Wu, Pei-Jung Chang, and Yu-Chuan Tsai

This study demonstrates that transplantation of circulating endothelial progenitor cells improves endothelial function of the injured pulmonary artery and attenuates damage of alveolar-capillary barrier in acute lung injury.

- Transient Hyperglycemia Affects the Extent of Ischemia-Reperfusion-induced Renal Injury in Rats** 402

Ryutaro Hirose, Fengyun Xu, Kim Dang, Tao Liu, Matthias Behrends, Paul R. Brakeman, Jeanine Wiener-Kronish, and Claus U. Niemann

Transient hyperglycemia aggravates renal ischemia-reperfusion injury. Hyperglycemia that exists before and during ischemia-reperfusion causes more severe renal injury than hyperglycemia that occurs after the initiation of ischemia-reperfusion.

- Isoflurane Preconditioning Decreases Myocardial Infarction in Rabbits via Up-regulation of Hypoxia Inducible Factor 1 That Is Mediated by Mammalian Target of Rapamycin** 415

Jacob Raphael, Zhiyi Zuo, Suzan Abedat, Ronen Beeri, and Yaacov Gozal

Isoflurane preconditioning increased hypoxia inducible factor-1 expression and activity. Inhibiting hypoxia inducible factor 1 by rapamycin abolished isoflurane-induced cardioprotection, suggesting that isoflurane preconditioning may be mediated via hypoxia inducible factor 1 and mammalian target of rapamycin signaling.

- Volatile Anesthetic Preconditioning Present in the Invertebrate *Caenorhabditis elegans*** 426

Baosen Jia and C. Michael Crowder

The volatile anesthetics halothane and isoflurane induce a delayed preconditioning protective response against hypoxic, azide, and thermal injury in the invertebrate *Caenorhabditis elegans*.

- Isoflurane Reduces Excitability of *Drosophila* Larval Motoneurons by Activating a Hyperpolarizing Leak Conductance** 434

David J. Sandstrom

Isoflurane-induced presynaptic inhibition in *Drosophila* motoneurons was studied using electrophysiology, genetics, and simulation. Simulations suggesting activation of a voltage-insensitive, hyperpolarizing current were supported by the presence of an isoflurane-activated leak in motoneuron somata.

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Amnestic Concentrations of Sevoflurane Inhibit Synaptic Plasticity of Hippocampal CA1 Neurons through γ -Aminobutyric Acid-mediated Mechanisms

447

Junko Ishizeki, Koichi Nishikawa, Kazuhiro Kubo, Shigeru Saito, and Fumio Goto

Amnestic concentrations of sevoflurane inhibit long-term potentiation of hippocampal CA1 neurons through γ -aminobutyric acid-mediated mechanisms and may thereby impair memory function.

Dexmedetomidine Increases Hippocampal Phosphorylated Extracellular Signal-regulated Protein Kinase 1 and 2 Content by an α_2 -Adrenoceptor-independent Mechanism: Evidence for the Involvement of Imidazoline I1 Receptors

457

Souhayl Dahmani, Andrea Paris, Virginie Jannier, Lutz Hein, Danielle Rouelle, Jens Scholz, Pierre Gressens, and Jean Mantz

Dexmedetomidine, an α_2 -adrenoceptor agonist, increases extracellular signal-regulated protein kinase 1 and 2 phosphorylation in the hippocampus. This effect is independent of α_2 adrenoceptors and is most likely to be mediated *via* the imidazoline I1 receptors.

■ **PAIN AND REGIONAL ANESTHESIA**

◆ **Mouse Model of Fracture Pain**

467

Vincent Mirville, Jean-Michel Laffosse, Olivier Fourcade, Jean-Pierre Girolami, and Ivan Tack

The authors describe a new mouse model of fracture pain that could be useful to investigate mechanisms of pain in genetically modified animals.

◆◆ **A Fracture Pain Model in the Rat: Adaptation of a Closed Femur Fracture Model to Study Skeletal Pain**

473

Katie T. Freeman, Nathan J. Koewler, Juan M. Jimenez-Andrade, Ryan J. Buus, Monica B. Herrera, Carl D. Martin, Joseph R. Ghilardi, Michael A. Kuskowski, and Patrick W. Mantyh

The authors of this study characterize skeletal pain in a previously validated rat femur fracture model. This model may help to define the mechanisms driving skeletal pain and develop new therapies for treating fracture pain.

◆ **Gabapentin Prevents Delayed and Long-lasting Hyperalgesia Induced by Fentanyl in Rats**

484

Alain C. Van Elstraete, Philippe Sitbon, Jean-Xavier Mazoit, and Dan Benhamou

Systemic and intrathecal gabapentin both prevent hyperalgesia induced by systemic administration of fentanyl in uninjured rats.

Blood-Brain Barrier Transport Helps to Explain Discrepancies in *In Vivo* Potency between Oxycodone and Morphine

495

Emma Boström, Margareta Hammarlund-Udenaes, and Ulrika S. H. Simonsson

The influence of blood-brain barrier transport on the pharmacokinetic-pharmacodynamic relations of oxycodone and morphine was investigated. Based on the same unbound concentration in blood, a sixfold higher concentration in brain was reached for oxycodone.

■ **REVIEW ARTICLE**

◆ **Metabolic Syndrome and Insulin Resistance: Perioperative Considerations**

506

Hema S. Bagry, Sreekrishna Raghavendran, and Franco Carli

This article provides a review of the pathophysiology, potential implications, and methods of modulation of perioperative insulin resistance and metabolic syndrome in surgical patients.

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■ CLINICAL CONCEPTS AND COMMENTARY

Diabetic Cardiomyopathy and Anesthesia: Bench to Bedside

524

Julien Amour and Judy R. Kersten

The epidemiology, etiology, physiology, and perioperative management of diabetic cardiomyopathy are reviewed.

■ CLASSIC PAPERS REVISITED

The Invention and Development of Enflurane, Isoflurane, Sevoflurane, and Desflurane

531

Ross C. Terrell

This article is a revisiting of original material published as: Terrell RC, Speers L, Szur AJ, Treadwell J, Ucciardi TR: General anesthetics: 1. Halogenated methyl ethyl ethers as anesthetic agents. *J Med Chem* 1971; 14:517-9.

■ CASE REPORT

Chronic Back Pain Secondary to a Calcified Epidural Blood Patch

535

Dafna Willner, Charles Weissman, and Micha Y. Shamir

■ CORRESPONDENCE

Epiduroscopy and Epidural Steroid Injections

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Douglas G. Merrill, James P. Rathmell, and Richard W. Rosenquist

In Reply *James E. Heavner and Hemmo A. Bosscher*

Nitrous Oxide and Evidence-based Medicine: Here We Go Again

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Marek A. Mirski and Allan Gottschalk

Nitrous Oxide or Nitrogen Effect

James S. Dawson and Jonathan G. Hardman

Nitrous Oxide Remains a Valuable Adjuvant for Surgery

Paul F. White and Ronald H. Wender

Nitrous Oxide: Time to Laugh It Off? Not Quite

Deepak Sharma and Hari H. Dash

Nitrous Oxide and Supplementary Oxygen: Let's Give Moderation a Chance

Gonzalo Tornero-Campello

Explanatory versus Pragmatic Trials? The Methods Make the Difference

Paul Merckx, Catherine Paugam-Burtz, Sandrine Boudinet, Agnes Bonnet, and Jean Mantz

In Reply

Paul S. Myles, Kate Leslie, Matthew T. V. Chan, Andrew Forbes, Michael J. Paech, Philip Peyton, Brendan S. Silbert, and Elaine Pascoe

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