



ON THE COVER:

The cover incorporates a latex sculpture by University of Wisconsin-Whitewater art professor Teresa F. Faris, whose work explores her own experience with, and perception of, human fragility. Ms. Faris became sensitized to latex after working extensively with the material for a series of jewelry pieces in 2008. www.teresafaris.com:

- Draisci *et al.*: Latex Sensitization: A Special Risk for the Obstetric Population?, pp. 565
- Sampathi and Lerman: Perioperative Latex Allergy in Children, pp. 673

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CME CME Article

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SPECIAL ARTICLES

- 🌐 **Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures—An Updated Report by the American Society of Anesthesiologists Committee on Standards and Practice Parameters** 495
- The American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration presents an updated report of the Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

PERIOPERATIVE MEDICINE

- CME** ♦♦ **Radiation Exposure of the Anesthesiologist in the Neurointerventional Suite** 512
Zirka H. Anastasian, Dorothea Strozyk, Philip M. Meyers, Shuang Wang, and Mitchell F. Berman
- Anesthesiologists may be exposed to more ocular radiation than radiologists during interventional procedures in neuroradiology. Many radiologists wear leaded glasses to prevent radiation-induced cataracts; anesthesiologists should consider the same protection.
- ♦ **Rats Exposed to Isoflurane *In Utero* during Early Gestation Are Behaviorally Abnormal as Adults** 521
Arvind Palanisamy, Mark G. Baxter, Pamela K. Keel, Zhongcong Xie, Gregory Crosby, and Deborah J. Culley
- This preclinical study examined the impact of maternal general anesthesia on neurodevelopment in the offspring, and suggests that second trimester exposure to isoflurane may be associated with cognitive and noncognitive behavioral abnormalities in adult rats.
- ♦♦ **ED₅₀ and ED₉₅ of Intrathecal Bupivacaine in Morbidly Obese Patients Undergoing Cesarean Delivery** 529
Brendan Carvalho, Jeremy Collins, David R. Drover, Lindsey Atkinson Ralls, and Edward T. Riley
- This study suggests that morbidly obese patients undergoing cesarean delivery with spinal anesthesia have similar intrathecal bupivacaine dose requirements, compared with nonobese patients, and that dose reductions in morbidly obese patients may lead to inadequate anesthesia.
- ♦ **Peristaltic Pneumatic Compression of the Legs Reduces Fluid Demand and Improves Hemodynamic Stability during Surgery: A Randomized, Prospective Study** 536
Nicholas Kiefer, Judith Theis, Gabriele Putensen-Himmer, Andreas Hoeft, and Sven Zenker
- Peristaltic pneumatic compression of the legs reduces fluid demand and enhances intraoperative hemodynamic stability during minor surgery.
- ♦♦ **Bispectral Index Monitoring, Duration of Bispectral Index Below 45, Patient Risk Factors, and Intermediate-term Mortality after Noncardiac Surgery in the B-Unaware Trial** 545
Miklos D. Kertai, Ben J. A. Palanca, Nirvik Pal, Beth A. Burnside, Lini Zhang, Furqaan Sadiq, Kevin J. Finkel, Michael S. Avidan, and the B-Unaware Study Group
- Postoperative mortality has been associated with cumulative anesthetic duration below an arbitrary processed electroencephalographic threshold (bispectral index [BIS] < 45). This study evaluated data from a previous trial to determine whether cumulative duration of BIS < 45, cumulative anesthetic dose, comorbidities, or intraoperative events were independently associated with postoperative mortality. A total of 358 patients (24.3%) died during a mean follow-up of 3.2 yr. Male gender, stroke history, type II diabetes, surgery for malignancy, American Society of Anesthesiologists physical status, and intensive care unit time were associated with increased mortality. Increased body mass index, increased hemoglobin concentration, and intermediate-risk surgery were associated with decreased mortality. Cumulative duration of BIS < 45 was not associated with mortality. This study found no evidence that either cumulative BIS values below a threshold of 40 or 45 or cumulative inhalational anesthetic dose is injurious to patients.

◆ **Hypotension during Fluid-restricted Abdominal Surgery: Effects of Norepinephrine Treatment on Regional and Microcirculatory Blood Flow in the Intestinal Tract** 557

Luzius B. Hiltbrand, Eliana Koepfli, Oliver Kimberger, Gisli H. Sigurdsson, and Sebastian Brandt

Treatment of perioperative hypotension with norepinephrine in a fluid-restricted model of open abdominal surgery had no adverse effects on regional or microcirculatory blood flow or tissue oxygen tension in the hepatosplanchnic region.

Latex Sensitization: A Special Risk for the Obstetric Population? 565

Gaetano Draisci, Bruno A. Zanfini, Eleonora Nucera, Stefano Catarci, Raffaella Sangregorio, Domenico Schiavino, Alice Mannocci, and Giampiero Patriarca

The prevalence of latex sensitization in 294 pregnant women compared with 294 nulliparous women was investigated. A higher prevalence of latex sensitization was seen in the obstetric population.

Remifentanyl Degradation in Umbilical Cord Blood of Preterm Infants 570

Lars Welzing, Sabine Ebenfeld, Verena Dlugay, Martin H. J. Wiesen, Bernhard Roth, and Carsten Mueller

Very immature preterm infants (less than 28 gestational weeks) exhibit a high nonspecific esterase activity in umbilical cord blood that is comparable with that of term infants.

Comparison of the Neuroapoptotic Properties of Equipotent Anesthetic Concentrations of Desflurane, Isoflurane, or Sevoflurane in Neonatal Mice 578

George K. Istaphanous, Jennifer Howard, Xinyu Nan, Elizabeth A. Hughes, John C. McCann, John J. McAuliffe, Steve C. Danzer, and Andreas W. Loepke

The minimum alveolar concentration was determined for desflurane, isoflurane, or sevoflurane in neonatal mice. The administration of equipotent doses of these inhaled anesthetics for 6 h was equally neurotoxic, suggesting no benefits of using one particular drug.

Differential Effects of Isoflurane on High-frequency and Low-frequency γ Oscillations in the Cerebral Cortex and Hippocampus in Freely Moving Rats 588

Anthony G. Hudetz, Jeannette A. Vizueté, and Siveshigan Pillay

Isoflurane attenuates high-frequency but not low-frequency γ oscillations in the cerebral cortex and hippocampus of freely moving rats.

Nitrous Oxide Diffusion and the Second Gas Effect on Emergence from Anesthesia 596

Philip J. Peyton, Ian Chao, Laurence Weinberg, Gavin J. B. Robinson, and Bruce R. Thompson

Elimination of nitrous oxide after inhalational anesthesia produces a clinically significant acceleration in the reduction of concentrations of the accompanying volatile agents, contributing to the speed of emergence observed after nitrous oxide anesthetic.

■ **CRITICAL CARE MEDICINE**

◆ **Toll-like Receptor 4 Signaling Confers Cardiac Protection against Ischemic Injury *via* Inducible Nitric Oxide Synthase- and Soluble Guanylate Cyclase-dependent Mechanisms** 603

E Wang, Yan Feng, Ming Zhang, Lin Zou, Yan Li, Emmanuel S. Buys, Peigen Huang, Peter Brouckaert, and Wei Chao

Using genetically modified mice and an *ex vivo* model of myocardial ischemic injury, this study demonstrates that Toll-like receptor 4 activation confers an ischemic protection *via* myeloid differentiation factor 88-dependent, but interferon- β -mediated transcription factor-independent, mechanism. Inducible nitric oxide synthase/soluble guanylate cyclase- α_1 are essential for the TLR4-induced cardiac protection.

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Wei Zhang, Toshishige Shibamoto, Yuhichi Kuda, Chieko Ohmukai, and Yasutaka Kurata

We determined whether β_1 - or β_2 -adrenoceptor antagonist modulated pulmonary responses to anaphylaxis. The pulmonary vasoconstriction and bronchoconstriction during anaphylactic hypotension in anesthetized Sprague-Dawley rats were demonstrated to be weakened *via* β_2 -adrenoceptor activation by endogenous epinephrine.

■ PAIN MEDICINE

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Eric E. Ewan and Thomas J. Martin

Spinal nerve ligation in rats results in attenuation of morphine and heroin facilitation of rewarding electrical stimulation of the ventral tegmental area. These data indicate that nerve injury alters opioid pharmacology of limbic reward circuitry.

Involvement of the Lateral Amygdala in the Antiallodynic and Reinforcing Effects of Heroin in Rats after Peripheral Nerve Injury

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Thomas J. Martin, Nancy L. Buechler, Susy A. Kim, Eric E. Ewan, Ruoyu Xiao, and Steven R. Childers

μ -Opioid receptor blockade in the lateral amygdala attenuated both the antiallodynic and reinforcing effects of heroin in spinal nerve-ligated rats. This blockade did not alter heroin self-administration in normal rats.

Spinal Macrophage Migration Inhibitory Factor Is a Major Contributor to Rodent Neuropathic Pain-like Hypersensitivity

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FuZhou Wang, ShiQin Xu, XiaoFeng Shen, XiRong Guo, YuZhu Peng, and Jie Yang

Spinal macrophage migration inhibitory factor functions as a major mediator of sciatic chronic constriction nerve injury-induced neuropathic pain-like hypersensitivity through activating the extracellular signal-regulated kinase 1/2–*N*-methyl-D-aspartate receptor pathway.

Inflammation Confers Dual Effects on Nociceptive Processing in Chronic Neuropathic Pain Model

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Jiin-Tarnq Liou, Fu-Chao Liu, Chih-Chieh Mao, Ying-Shu Lai, and Yuan-Ji Day

The authors analyzed the relationship of neuropathic pain behavior and inflammatory signals in mice with different levels of immunocompromise, determining that the contribution of inflammation to nerve injury is complex with biphasic modulation.

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Hepcidin and Anemia of the Critically Ill Patient: Bench to Bedside

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Sigismond Lasocki, Dan Longrois, Philippe Montravers, and Carole Beaumont

A better comprehension of iron metabolism, linked to the discovery of hepcidin, changes our understanding of anemia in the critically patient and opens new areas for research at the bedside and in the laboratory.

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Stuart A. Forman

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