



ON THE COVER:

Obstructive sleep apnea (OSA) and postoperative delirium occur commonly and are the focus of many clinical recommendations and ongoing research. In this issue and on the cover we highlight an unexpected and large risk of postoperative delirium in patients with OSA.

- Bateman and Eikermann: Obstructive Sleep Apnea Predicts Adverse Perioperative Outcome: Evidence for an Association between Obstructive Sleep Apnea and Delirium, p. 753
- Flink *et al.*: Obstructive Sleep Apnea and Incidence of Postoperative Delirium after Elective Knee Replacement in the Nondemented Elderly, p. 788

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Rational Preoperative Blood Type and Screen Testing Criteria

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Postoperative Cognitive Decline: Where Art Tau?

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CME Obstructive Sleep Apnea Predicts Adverse Perioperative Outcome: Evidence for an Association between Obstructive Sleep Apnea and Delirium

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Mast Cells: Source of Inflammation in Complex Regional Pain Syndrome?

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SPECIAL ARTICLES

Leading into the Future: The 50th Annual Rovenstine Lecture

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It is time to seize opportunities available to lead the redesign of perioperative health care, create/manage a surgical home, provide other valued care outside the operating room, and promote reimbursement models that reward evidence-based quality outcomes.

PERIOPERATIVE MEDICINE

Systematic Criteria for Type and Screen Based on Procedure's Probability of Erythrocyte Transfusion

Franklin Dexter, Johannes Ledolter, Erika Davis, Thomas A. Witkowski, Jay H. Herman, and Richard H. Epstein

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The authors validated a method to determine procedures on the maximum surgical blood order schedule for which type and screen was not indicated using the estimated blood losses and incidences of transfusion.

◇ Refers to This Month in Anesthesiology

◆ Refers to Editorial Views

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CME CME Article

- ◆ **Tau Phosphorylation and Sevoflurane Anesthesia: An Association to Postoperative Cognitive Impairment** 779
Hélène Le Freche, Jonathan Brouillette, Francisco-José Fernandez-Gomez, Pauline Patin, Raphaëlle Caillierez, Nadège Zommer, Nicolas Sergeant, Valérie Buée-Scherrer, Gilles Lebuffe, David Blum, and Luc Buée
 In mice, repeated exposure of sevoflurane, in normothermic conditions, exerts detrimental effects on spatial memory, which correlate through activation of both Akt and Erk pathways to tau hyperphosphorylation, an abnormal feature of neurodegeneration in Alzheimer disease.
- ◆ **Obstructive Sleep Apnea and Incidence of Postoperative Delirium after Elective Knee Replacement in the Nondemented Elderly** 788
Benjamin J. Flink, Sarah K. Rivelli, Elizabeth A. Cox, William D. White, Grace Falcone, Thomas P. Vail, Christopher C. Young, Michael P. Bolognesi, Andrew D. Krystal, Paula T. Trzepacz, Richard E. Moon, and Madan M. Kwatra
 This is the first prospective study employing validated measures of delirium to identify an association between preexisting obstructive sleep apnea and postoperative delirium.
- ◆ **A Comparison of Epidural Analgesia and Traditional Pain Management Effects on Survival and Cancer Recurrence after Colectomy: A Population-based Study** 797
Kenneth C. Cummings, III, Fang Xu, Linda C. Cummings, and Gregory S. Cooper
 This cohort study found that epidural use is associated with improved survival in patients with nonmetastatic colorectal cancer undergoing resection, but does not support an association between epidural use and decreased cancer recurrence.
- ◆ **Effects of Crystalloid versus Colloid and the α -2 Agonist Brimonidine versus Placebo on Intraocular Pressure during Prone Spine Surgery: A Factorial Randomized Trial** 807
Ehab Farag, Daniel I. Sessler, Bledar Kovaci, Lu Wang, Edward J. Mascha, Gordon Bell, Iain Kalfas, Edward Rockwood, and Andrea Kurz
 Brimonidine eye drops alone reduced intraoperative time-weighted average intraocular pressure between 1 and 8 mmHg, while 5% albumin had little effect.
- ◆ **Isoflurane Enhances Both Fast and Slow Synaptic Inhibition in the Hippocampus at Amnestic Concentrations** 816
Shuiping Dai, Misha Perouansky, and Robert A. Pearce
 Low concentrations of isoflurane enhance inhibition enough to contribute substantially to isoflurane-induced amnesia.
- ◆ **Mechanisms Involved in Cardioprotective Effects of Pravastatin Administered during Reoxygenation in Human Myocardium *In Vitro*** 824
Sandrine Lemoine, Stéphane Allouche, Laurent Coulbault, Valérie Cornet, Massimo Massetti, Philippe Galera, Jean-Louis Gérard, and Jean-Luc Hanouz
 Pravastatin administered at the reoxygenation period protects human myocardium against hypoxia-reoxygenation injury via activation of nitric oxide synthase, inhibition of mitochondrial permeability transition pore opening, and antiapoptotic effects.
- ◆ **Impact of Extracranial Contamination on Regional Cerebral Oxygen Saturation: A Comparison of Three Cerebral Oximetry Technologies** 834
Sophie N. Davie and Hilary P. Grocott
 Cerebral oximetry devices appear to have a significant amount of extracranial contamination in their measurements of cerebral oxygen saturation.
- ◆ **Antiproliferative Effects of Local Anesthetics on Mesenchymal Stem Cells: Potential Implications for Tumor Spreading and Wound Healing** 841
Eliana Lucchinetti, Ahmed E. Awad, Mamoona Rahman, Jianhua Feng, Phing-How Lou, Liyan Zhang, Lavinia Ionescu, Hélène Lemieux, Bernard Thébaud, and Michael Zaugg
 Mesenchymal stem cells exhibit marked tropism to wounds and tumors. The authors show that local anesthetics affect important aspects of mesenchymal stem cell biology *in vitro* including proliferation, differentiation, mitochondrial respiration, and membrane turnover. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

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- Overexpression of the μ -Opioid Receptor in Human Non-Small Cell Lung Cancer Promotes Akt and mTOR Activation, Tumor Growth, and Metastasis** 857
Frances E. Lennon, Tamara Mirzapojazova, Bolot Mambetsariev, Ravi Salgia, Jonathan Moss, and Patrick A. Singleton

Overexpression of the μ -opioid receptor in human non-small cell lung cancer cells increases both *in vitro* and *in vivo* measures of tumor growth and metastasis.

■ CRITICAL CARE MEDICINE

- Anesthetic Propofol Causes Glycogen Synthase Kinase-3 β -regulated Lysosomal/Mitochondrial Apoptosis in Macrophages** 868
Chung-Hsi Hsing, Yu-Hong Chen, Chia-Ling Chen, Wei-Ching Huang, Ming-Chung Lin, Po-Chun Tseng, Chi-Yun Wang, Cheng-Chieh Tsai, Pui-Ching Choi, and Chiou-Feng Lin

Overdose propofol causes macrophages undergoing apoptosis *in vitro* and *in vivo*. Activation of glycogen synthase kinase-3 β plays an indispensable role in propofol overdose-induced lysosomal/mitochondrial pathways of apoptosis through Mcl-1 down-regulation and cathepsin B activation.

■ PAIN MEDICINE

- ◆ **Substance P Signaling Controls Mast Cell Activation, Degranulation, and Nociceptive Sensitization in a Rat Fracture Model of Complex Regional Pain Syndrome** 882
Wen-Wu Li, Tian-Zhi Guo, De-yong Liang, Yuan Sun, Wade S. Kingery, and J. David Clark

Tibia fracture in rats enhances peptidergic neuron-mast cell signaling, resulting in mast cell migration, activation, and degranulation in the injured limb, with subsequent nociceptive sensitization.

- ◇ **μ -Opioid Receptor Gene A118G Polymorphism Predicts Survival in Patients with Breast Cancer** 896
Andrey V. Bortsov, Robert C. Millikan, Inna Belfer, Richard L. Boortz-Marx, Harendra Arora, and Samuel A. McLean

Preclinical studies suggest that opioids may promote tumor growth. Genetic polymorphisms have been shown to affect opioid receptor function and to modify the clinical effects of morphine. The authors assessed the association between six common polymorphisms in the μ -opioid receptor gene and breast cancer survival. A total of 2,039 women ages 23–74 yr diagnosed with breast cancer between 1993 and 2001 were followed through 2006. Patient genotype at A118G was associated with breast cancer–specific mortality at 10 yr. These results suggest that opioid pathways may be involved in tumor growth. Further studies examining the association between genetic variants influencing opioid system function and cancer survival are warranted.

- Pore Helix Domain Is Critical to Camphor Sensitivity of Transient Receptor Potential Vanilloid 1 Channel** 903
Lenka Marsakova, Filip Touska, Jan Krusek, and Viktorie Vlachova

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