



## ON THE COVER:

Generation of ASA Practice Parameters is a detailed process from literature synthesis to wide input from practitioners, overseen by Jeffrey L. Apfelbaum, M.D. (left), as Chair of the Committee, and methodologists, Richard T. Connis, Ph.D. (middle), and David G. Nickinovich, Ph.D.

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## ■ PERIOPERATIVE MEDICINE

- ◆ **Effects of Propofol, Sevoflurane, Remifentanyl, and (S)-Ketamine in Subanesthetic Concentrations on Visceral and Somatosensory Pain–evoked Potentials** 308

*Gisela Untergehrer, Denis Jordan, Sebastian Eyl, and Gerhard Schneider*

Analysis of visceral and somatosensory pain–evoked potentials indicate suppressive effects of subanesthetic concentrations of propofol, sevoflurane, remifentanyl, and (s)-ketamine.

- ◆◆ **A Double-blind Randomized Trial of Wound and Intercostal Space Infiltration with Ropivacaine during Breast Cancer Surgery: Effects on Chronic Postoperative Pain** 318

*Aline Albi-Feldzer, Emmanuelle Mouret-Fourme E, Smail Hamouda, Cyrus Motamed, Pierre-Yves Dubois, Ludivine Jouanneau, and Christian Jayr*

Ropivacaine wound infiltration after breast cancer surgery decreased immediate postoperative pain and the percentage of pain-free patients for the first 48 h but did not decrease chronic pain at 3, 6, and 12 months postoperatively.

- ◆◆ **Adenosine A<sub>1</sub> Receptors in Mouse Pontine Reticular Formation Depress Breathing, Increase Anesthesia Recovery Time, and Decrease Acetylcholine Release** 327

*George C. Gettys, Fang Liu, Ed Kimlin, Helen A. Baghdoyan, and Ralph Lydic*

Adenosine acting at A<sub>1</sub> receptors in the pontine reticular formation depress breathing, increase anesthesia recovery time, and decrease acetylcholine release. These results suggest that an adenosinergic-cholinergic interaction contributes to the wakefulness stimulus for breathing.

- ◆◆ **Intraoperative Infusion of 0.6–0.9  $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$  Remifentanyl Induces Acute Tolerance in Young Children after Laparoscopic Ureteroneocystostomy** 337

*Sung-Hoon Kim, Min H. Lee, Hyungseok Seo, In-Gyu Lee, Jeong-Yeon Hong, and Jai-Hyun Hwang*

The intraoperative use of 0.3  $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$  remifentanyl for 3 h did not induce acute tolerance, but the administration of 0.6–0.9  $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$  remifentanyl to young children resulted in acute tolerance for 24 h after surgery.

- ◆◆ **CASQ1 Gene Is an Unlikely Candidate for Malignant Hyperthermia Susceptibility in the North American Population** 344

*Natalia Kraeva, Elena Zvaritch, Wanda Frodis, Olga Sizova, Alexander Kraev, David H. MacLennan, and Sheila Riazi*

A genetic study involving 215 North American malignant hyperthermia susceptible patients and 292 controls support a role for calsequestrin 1 gene coding sequence polymorphisms in malignant hyperthermia susceptibility.

- ◆◆ **Strain Differences in Cortical Electroencephalogram Associated with Isoflurane-induced Loss of Consciousness** 350

*J. Bruce McCallum, Siveshigan Pillay, Jeannette A. Vizuete, Gary Mouradian, Anthony G. Hudetz, and Thomas A. Stekiel*

Enhanced sensitivity to isoflurane-induced loss of consciousness in Dahl Salt Sensitive rats compared to Brown Norway controls were suggestive of separate mechanisms for anesthetic induction and emergence that can be identified using a genetic model.

- ◆◆ **Real-time Two-dimensional Ultrasound Guidance for Central Venous Cannulation: A Meta-analysis** 361

*Shao-yong Wu, Quan Ling, Long-hui Cao, Jian Wang, Mei-xi Xu, and Wei-an Zeng*

Among adults receiving central venous cannulation, the use of real-time two-dimensional ultrasound guidance decreased the risks of cannulation failure, arterial puncture, hematoma, and hemothorax. Additional data are necessary to evaluate these outcomes in pediatric patients.

- ◆◆ **Effects of Divided Attention and Operating Room Noise on Perception of Pulse Oximeter Pitch Changes: A Laboratory Study** 376

*Ryan A. Stevenson, Joseph J. Schlesinger, and Mark T. Wallace*

High-visual attentional load impacts the ability of anesthesiologists to detect changes in oxygen saturation concentrations through pulse oximetry and reduces the speed of response to such changes. These effects are compounded in noisy environments.

**Does Low-dose Droperidol Increase the Risk of Polymorphic Ventricular Tachycardia or Death in the Surgical Patient?** 382

*Gregory A. Nuttall, Ann M. Malone, Carrie A. Michels, Laurie C. Trudell, Tricia D. Renk, Mary E. Shirk Marienau, William C. Oliver, and Michael J. Ackerman*

The Food and Drug Administration issued a black box warning regarding the use of droperidol and the potential for torsade de pointes. Our study indicates that the black box warning for low-dose droperidol is unnecessary.

◆ **Effect of Waxy Maize-derived Hydroxyethyl Starch 130/0.4 on Renal Function in Surgical Patients** 387

*Claude Martin, Matthias Jacob, Eric Vicaut, Bertrand Guidet, Hugo Van Aken, and Andrea Kurz*

A meta-analysis of all randomized clinical studies providing data about renal safety of waxy maize-derived hydroxyethyl starch 130/0.40 in surgical patients showed no significant negative effects on the documented variables for renal function.

■ **CRITICAL CARE MEDICINE**

◆◆ **Effects of Intravascular Volume Replacement on Lung and Kidney Function and Damage in Nonseptic Experimental Lung Injury** 395

*Pedro L. Silva, Andreas Güldner, Christopher Uhlig, Nadja Carvalho, Alessandro Beda, Ines Rentzsch, Michael Kasper, Bärbel Wiedemann, Peter M. Spieth, Thea Koch, Vera L. Capelozzi, Paolo Pelosi, Patricia R. M. Rocco, and Marcelo Gama de Abreu*

In a nonseptic model of acute lung injury, a modern starch solution reduced lung edema and damage without kidney injury compared to Ringer's acetate, and yielded lower intra-abdominal pressure and renal damage compared to gelatin.

■ **PAIN MEDICINE**

◆◆ **Adductor Canal Block *versus* Femoral Nerve Block and Quadriceps Strength: A Randomized, Double-blind, Placebo-controlled, Crossover Study in Healthy Volunteers** 409

*Pia Jæger, Zbigniew J.K. Nielsen, Maria H. Henningsen, Karen Lisa Hilsted, Ole Mathiesen, and Jørgen B. Dahl*

The femoral nerve block (FNB) may be the gold standard for postoperative analgesia after total knee arthroplasty but continuous FNBs reduce quadriceps muscle strength. In theory, the adductor canal blockade (ACB) is a predominantly sensory blockade. Twelve healthy young men were enrolled into a double-blind, placebo-controlled, randomized, crossover study of the ACB and the FNB, both with ropivacaine. Quadriceps strength was reduced from baseline compared with placebo by both ACB (8%) and FNB (49%) and by FNB compared with ACB. ACB preserved quadriceps strength and the ability to ambulate better than FNB. The analgesic effect of the ACB needs to be compared with that of the FNB in a clinical setting.

**Nerve Injury-related Autoimmunity Activation Leads to Chronic Inflammation and Chronic Neuropathic Pain** 416

*Jing Li, Gui-Hua Wei, He Huang, Yun-Ping Lan, Bin Liu, Hui Liu, Wei Zhang, and Yun-Xia Zuo*

Neuropathic pain is difficult to treat because the underlying mechanisms are unclear. Our study suggests that chronic neuropathic pain might be caused by chronic inflammation resulting from a nervous autoimmune reaction triggered by nerve injury.

**Role of Capsaicin in a Murine Model of Labor and Delivery** 430

*Fadi G. Mirza, Ayed A. Fakhoury, Thomas J. Rowley, Pamela D. Flood*

In a behavioral murine model, capsaicin appears to reduce labor pain behaviors.

**A Single-nucleotide Polymorphism in *SCN9A* May Decrease Postoperative Pain Sensitivity in the General Population** 436

*Guangyou Duan, Guifang Xiang, Xianwei Zhang, Ruimei Yuan, Huiming Zhan, and Dongmei Qi*

In 200 patients undergoing a same surgery in the general population, the postoperative pain sensitivity was associated with the nonsynonymous single-nucleotide polymorphism of *SCN9A* 3312G>T.

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*Michael S. Avidan and George A. Mashour*

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