



Anesthesiology



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 Society for Obstetric Anesthesia and Perinatology



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- ◆ Heart Rate Variability Predicts Severe Hypotension after Spinal Anesthesia for Elective Cesarean Delivery 1086
Robert Hans, Berthold Bein, Thomas Ledowski, Marlies Lehmkuhl, Henning Ohnesorge, Wiebke Scherkl, Markus Steinfath, Jens Scholz, and Peter H. Tonner
- The predictive value of heart rate variability was evaluated in patients scheduled to undergo elective cesarean delivery during spinal anesthesia. A retrospective model showed differences of heart rate variability depending on the hypotension after spinal anesthesia. In a prospective design, heart rate variability predicted hypotension after spinal anesthesia.

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- CME** ◆ **Prolongation of QTc Interval after Postoperative Nausea and Vomiting Treatment by Droperidol or Ondansetron** **1094**
Beny Charbit, Pierre Albaladejo, Christian Funck-Brentano, Mathieu Legrand, Emmanuel Samain, and Jean Marty
 This study found significant QTc-interval prolongation after droperidol or ondansetron was administered to treat postoperative nausea and vomiting. This suggests a possible increased risk of cardiac arrhythmia for both drugs, even at low doses.
- ◆ **Effect of Low-dose Droperidol on the QT Interval during and after General Anesthesia: A Placebo-controlled Study** **1101**
Paul F. White, Dajun Song, Joao Abrao, Kevin W. Klein, and Bryan Navarette
 The effect of “antiemetic” doses of droperidol on the QTc interval was evaluated in a randomized, double-blind, placebo-controlled study. Intravenous droperidol, 0.625–1.25 mg, administered during general anesthesia, was associated with a transient 7–11% prolongation in the heart rate-corrected QT interval. Maximum QTc prolongation occurred at 3–6 min after intravenous injection of the antiemetic drug. However, the changes in QTc did not differ significantly from those seen in patients given saline. Although QTc prolongation was observed in the early postoperative period, it was similar in patients who did or did not receive droperidol.
- ◆ **Intubating Laryngeal Mask Airway in Morbidly Obese and Lean Patients: A Comparative Study** **1106**
Xavier Combes, Stéphane Sauvat, Bertrand Leroux, Marc Dumerat, Emanuel Sherrer, Cyrus Motamed, Archie Brain, and Gilles D’Honneur
 The authors demonstrated that airway management with the intubating laryngeal mask airway was of better quality in obese patients as compared with lean patients.
- ◆ **Preoxygenation Is More Effective in the 25° Head-up Position Than in the Supine Position in Severely Obese Patients: A Randomized Controlled Study** **1110**
Benjamin J. Dixon, John B. Dixon, Jennifer R. Carden, Anthony J. Burn, Linda M. Schachter, Julie M. Playfair, Cheryl P. Laurie, and Paul E. O’Brien
 Preoxygenation of severely obese subjects in the 25° head-up position achieves higher oxygen tensions, allowing a clinically significant increase in the desaturation safety period. This provides greater time for intubation and airway control.

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Development and Validation of a Perioperative Satisfaction Questionnaire **1116**

Pascal Auquier, Nicolas Pernoud, Nicolas Bruder, Marie-Claude Simeoni, Jean-Pierre Auffray, Christian Colavolpe, Georges François, François Gouin, Jean-Claude Manelli, Claude Martin, Christophe Sapin, and Jean-Louis Blache

This article describes the development, psychometric validation, and clinical contributions of a perioperative satisfaction questionnaire.

Pharmacokinetics and Pharmacodynamics of Mivacurium in Patients Phenotypically Homozygous for the Atypical Plasma Cholinesterase Variant: Effect of Injection of Human Cholinesterase **1124**

Doris Østergaard, Jørgen Viby-Mogensen, Søren N. Rasmussen, Mona R. Gätke, and France Varin

Patients phenotypically homozygous for the atypical plasma cholinesterase gene have a reduced clearance and prolonged elimination of mivacurium and hence a prolonged duration of action. Administration of human plasma cholinesterase increases clearance and elimination of mivacurium and hence decreases the duration of action of mivacurium.

◆ Severe Pulmonary Hypertension during Pregnancy: Mode of Delivery and Anesthetic Management of 15 Consecutive Cases **1133**

Martine Bonnin, Frédéric J. Mercier, Olivier Sitbon, Sandrine Roger-Christoph, Xavier Jaïs, Marc Humbert, François Audibert, René Frydman, Gérald Simonneau, and Dan Benhamou

Fifteen pregnancies in 14 women with severe pulmonary hypertension of various etiologies were managed during the past 10 yr. Two patients died before delivery, and three patients died during the postpartum period. Therefore, despite the most modern management efforts, pregnancy is still associated with a high risk of mortality (36%) in these patients.

Effect of Nicotine Replacement Therapy on Stress and Smoking Behavior in Surgical Patients **1138**

David O. Warner, Christi A. Patten, Steven C. Ames, Kenneth P. Offord, and Darrell R. Schroeder

Perioperative nicotine replacement therapy in smokers undergoing elective surgery does not affect symptoms of nicotine withdrawal or perceived stress. However, nicotine replacement therapy does modify some aspects of postoperative smoking behavior, especially in patients with shorter hospital stays.

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LABORATORY INVESTIGATIONS

- Volatile Anesthetics Induce Caspase-dependent, Mitochondria-mediated Apoptosis in Human T Lymphocytes *In Vitro*** **1147**

Torsten Loop, David Dovi-Akue, Michael Frick, Martin Roesslein, Lotti Egger, Matjaz Humar, Alexander Hoetzel, Rene Schmidt, Christoph Borner, Heike L. Pahl, Klaus K. Geiger, and Benedikt H. J. Pannen

Sevoflurane and isoflurane induce apoptosis in T lymphocytes *via* increased mitochondrial membrane permeability and caspase-3 activation but independently of death receptor signaling.

- Effect of Sleep Deprivation on Righting Reflex in the Rat Is Partially Reversed by Administration of Adenosine A1 and A2 Receptor Antagonists** **1158**

Avery Tung, Stacy Herrera, Martin J. Szafran, Kristen Kasza, and Wallace B. Mendelson

Sleep deprivation accelerates isoflurane-induced loss of righting reflex in rats. The authors hypothesized that this effect results from adenosine accumulation during prolonged sleep loss. They found that blockade of either adenosine A1 or A2a receptors partially reversed the sleep deprivation effect. Simultaneous blockade of both receptors had an additive effect.

- Droperidol Inhibits Intracellular Ca^{2+} , Myofilament Ca^{2+} Sensitivity, and Contraction in Rat Ventricular Myocytes** **1165**

Toshiya Shiga, Sandro Yong, Joseph Carino, Paul A. Murray, and Derek S. Damron

Therapeutic concentrations of droperidol have a direct negative inotropic effect on cardiomyocyte contraction mediated by a decrease in the availability of intracellular Ca^{2+} and by a decrease in myofilament Ca^{2+} sensitivity in adult rat ventricular myocytes. Droperidol has no effect on action potential duration.

- Involvement of Adenosine in the Antiinflammatory Action of Ketamine** **1174**

Julia Mazar, Boris Rogachev, Gad Shaked, Nadav Y. Ziv, David Czeiger, Cidio Chaimovitz, Moshe Zlotnik, Igor Mukmenev, Gerardo Byk, and Amos Douvdevani

In a mouse model, ketamine markedly reduced the mortality from sepsis. Ketamine administration was associated with a surge at 20–35 min of adenosine in serum and peritoneal fluid. An adenosine A2A receptor agonist mimicked the antiinflammatory effect of ketamine, whereas A2A receptor antagonists blocked its effects and reversed the beneficial effect of ketamine on survival from bacterial sepsis.

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Opposing Effects of Isoflurane and Sevoflurane on Neurogenic Pulmonary Edema Development in an Animal Model 1182

Nobuhisa Kandatsu, Yong-Shan Nan, Guo-Gang Feng, Kimitoshi Nishiwaki, Mitsuru Hirokawa, Kiyonori Ishikawa, Toru Komatsu, Takashi Yokochi, Yasuhiro Shimada, and Naohisa Ishikawa

Isoflurane enhanced the incidence of neurogenic pulmonary edema, possibly by increasing the expression of vascular endothelial growth factor, in contrast to sevoflurane, which protected against it.

Ketamine Preconditions Isolated Human Right Atrial Myocardium: Roles of Adenosine Triphosphate-sensitive Potassium Channels and Adrenoceptors 1190

Jean-Luc Hanouz, Lan Zhu, Emmanuel Persehaye, Massimo Massetti, Gerard Babatasi, André Khayat, Pierre Ducouret, Benoit Plaud, and Jean-Louis Gérard

Ketamine preconditions isolated human myocardium through adenosine triphosphate-sensitive potassium channels and stimulation of adrenoceptors.

■ PAIN AND REGIONAL ANESTHESIA

Effect of Postoperative Epidural Analgesia on Rehabilitation and Pain after Hip Fracture Surgery: A Randomized, Double-blind, Placebo-controlled Trial 1197

Nicolai Bang Foss, Morten Tange Kristensen, Billy Bjarne Kristensen, Pia Søb Jensen, and Henrik Kehlet

Epidural analgesia reduced pain as an inhibiting factor in hip fracture rehabilitation, although it did not improve rehabilitation outcome. Motor blockade was not an inhibiting factor with epidural analgesia.

Epidural Administration of Neostigmine and Clonidine to Induce Labor Analgesia: Evaluation of Efficacy and Local Anesthetic-sparing Effect 1205

Fabienne Roelants, Patricia M. Lavand'homme, and Valérie Mercier-Fuzier

Epidural neostigmine, 750 μg , with clonidine, 75 μg , is an effective combination to induce selective labor analgesia without adverse effects. Further, clonidine use allows reduction of the subsequent needs for local anesthetic throughout the course of labor.

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Median Effective Dose (ED₅₀) of Nefopam and Ketoprofen in Postoperative Patients: A Study of Interaction Using Sequential Analysis and Isobolographic Analysis **1211**

Noémie Delage, Hilal Maaliki, H  l  ne Beloeil, Dan Benhamou, and Jean-Xavier Mazoit

The combination of ketoprofen and nefopam was tested for postoperative pain control using the Dixon up-and-down technique followed by an isobolographic analysis. This combination showed marked synergy.

Painful Nerve Injury Decreases Resting Cytosolic Calcium Concentrations in Sensory Neurons of Rats **1217**

Andreas Fuchs, Philipp Lirk, Cheryl Stucky, Stephen E. Abram, and Quinn H. Hogan

Peripheral nerve injury that produces hyperalgesia is accompanied by decreased resting concentrations of calcium in the somata of sensory neurons, especially in neurons with a presumed nonnociceptive modality.

Developmental Age Influences the Effect of Epidural Dexmedetomidine on Inflammatory Hyperalgesia in Rat Pups **1226**

Suellen M. Walker, Richard F. Howard, Kevin A. Keay, and Maria Fitzgerald

The effect of epidural dexmedetomidine on sensory processing, reversal of inflammatory hyperalgesia, and sedation was tested in rat pups. The response to epidural dexmedetomidine is developmentally regulated, because lower doses are effective in early life. Selective reversal of hyperalgesia is achieved at all ages, but the therapeutic window is narrow in the youngest pups.

Effects of Remifentanil on *N*-methyl-D-aspartate Receptor: An Electrophysiologic Study in Rat Spinal Cord **1235**

Emmanuel Guntz, H  l  ne Dumont, C  line Roussel, David Gall, Fran  ois Dufresne, Laetitia Cuvelier, David Blum, Serge N. Schiffmann, and Maurice Sosnowski

Ultiva^{  } activates *N*-methyl-D-aspartate receptor in rat spinal cord, but this activation is related to the presence of glycine. Remifentanil hydrochloride does not activate *N*-methyl-D-aspartate receptor but potentiates its activity through an intracellular pathway triggered by activation of μ -opioid receptor.

■ **ECONOMICS**

◇ **Estimating the Incidence of Prolonged Turnover Times and Delays by Time of Day** **1242**

Franklin Dexter, Richard H. Epstein, Eric Marcon, and Johannes Ledolter

The authors developed and validated a statistical method to estimate what percentage of turnover times are prolonged and occur at specified times of the day.

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REVIEW ARTICLES

- ◆ **Effects of Nonsteroidal Antiinflammatory Drugs on Patient-controlled Analgesia Morphine Side Effects: Meta-analysis of Randomized Controlled Trials** **1249**

Emmanuel Marret, Okba Kurdi, Paul Zufferey, and Francis Bonnet

A systematic review of 22 prospective, randomized, controlled trials demonstrated that the use of nonsteroidal antiinflammatory drugs in addition to patient-controlled analgesia morphine decreases the risk of postoperative nausea and vomiting and the risk of sedation but not the risk of pruritus, urinary retention, and respiratory depression. A regression analysis showed a positive relation between morphine consumption and incidence of postoperative nausea and vomiting.

- Endothelium-derived Hyperpolarizing Factor: A Cousin to Nitric Oxide and Prostacyclin** **1261**

Robert M. Bryan, Jr., Junping You, Elke M. Golding, and Sean P. Marrelli

Endothelium-derived hyperpolarizing factor is joining its cousins, nitric oxide and prostacyclin, to become recognized as an important regulator of blood flow.

CASE REPORTS

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Robert S. Holzman, Lisa Yoo, Victor L. Fox, and Steven J. Fishman

- Remifentanyl in the Intensive Care Unit: Tolerance and Acute Withdrawal Syndrome after Prolonged Sedation** **1281**

Bernard Delvaux, Yves Ryckwaert, Michel Van Boven, Marc De Kock, and Xavier Capdevila

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- In Reply** *Xavier Sala-Blanch, Jaume Pomés, Purificación Matute, Josep Valls-Solé, Anna Carrera, Xavier Tomás, and Anna I. García-Diez* **1283**

- Management of Anaphylactic Shock** **1284**

Rajesh Mahajan and Rahul Gupta

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