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■ PERIOPERATIVE MEDICINE

- ◆◆ **Quality of Postoperative Care after Major Orthopedic Surgery Is Correlated with Both Long-term Cardiovascular Outcome and Troponin Ic Elevation** 529
Sylvain Ausset, Yves Auroy, Catherine Verret, Dan Benhamou, Philippe Vest, Audrey Cirodde, and Bernard Lenoir
- The aim of this study was to assess the impact of changes in practice on both the incidence of postoperative myocardial infarction (PMI) measured by troponin Ic and long-term cardiac outcome. During a 3-yr period, the incidences of PMI and major adverse cardiac events (MACE) were used as result indicators for quality of care. Incidences of PMI and MACE were 8.9% versus 3.9% and 8.1% versus 1.9% before and after changes in practice, respectively. The postoperative care policy after major orthopedic surgery was strongly correlated with both short-term (i.e., PMI) and long-term cardiac outcome.*

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CME CME Article

- Metabolic Profiling of Hearts Exposed to Sevoflurane and Propofol Reveals Distinct Regulation of Fatty Acid and Glucose Oxidation: CD36 and Pyruvate Dehydrogenase as Key Regulators in Anesthetic-induced Fuel Shift** 541
 Lianguo Wang, Kerry W. S. Ko, Eliana Lucchinetti, Liyan Zhang, Heinz Troxler, Martin Hersberger, Mohamed A. Omar, Elena I. Posse de Chaves, Gary D. Lopaschuk, Alexander S. Clanchan, and Michael Zaugg
This study profiled the metabolites and metabolic changes in the myocardium exposed to sevoflurane, propofol, and Intralipid. Anesthetics and their solvents directly modulate the “metabolome,” which could be of relevance in patients with preexisting metabolic disorders. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT
- Increased Pulmonary Venous Resistance in Morbidly Obese Patients without Daytime Hypoxia: Clinical Utility of the Pulmonary Artery Catheter** 552
 Charles Her, Thomas Cerabona, Seung-Hoon Baek, and Sang-Wook Shin
Increased pulmonary venous resistance contributes to increased pulmonary artery diastolic-capillary wedge pressure gradient in morbid obesity.
- N-Acetylcysteine Protects against Bupivacaine-induced Myotoxicity Caused by Oxidative and Sarcoplasmic Reticulum Stress in Human Skeletal Myotubes** 560
 Olivier Galbes, Annick Bourret, Karine Nouette-Gaulain, Fabien Pillard, Stefan Matecki, Guillaume Py, Jacques Mercier, Xavier Capdevila, and Alexandre Philips
In human skeletal muscle myotubes, bupivacaine-induced myotoxicity is associated with reactive oxygen species production, oxidative stress, and sarcoplasmic/endoplasmic reticulum stress. N-Acetylcysteine protects against these iatrogenic effects in human myotubes.
- Potential Influence of the Anesthetic Technique Used during Open Radical Prostatectomy on Prostate Cancer-related Outcome: A Retrospective Study** 570
 Patrick Y. Wuethrich, Shu-Fang Hsu Schmitz, Thomas M. Kessler, George N. Thalman, Urs E. Studer, Frank Stueber, and Fiona C. Burkhard
The previously reported effect of epidural analgesia on cancer progression could be confirmed for clinical progression-free survival in a comparison of general anesthesia plus epidural analgesia and general anesthesia plus morphine–ketorolac analgesia in patients undergoing radical prostatectomy.
- Pregnancy Does Not Enhance Volatile Anesthetic Sensitivity on the Brain: An Electroencephalographic Analysis Study** 577
 Hiroshi Ueyama, Satoshi Hagihira, Masaki Takashina, Aya Nakae, and Takashi Mashimo
This electroencephalographic study has shown that pregnancy does not enhance hypnotic effect of sevoflurane. These results suggest that the decrease in minimum alveolar concentration during pregnancy does not mean an enhanced volatile anesthetic effect on the brain.
- Variations in Pharmacology of β -Blockers May Contribute to Heterogeneous Results in Trials of Perioperative β -Blockade** 585
 Robert G. Badgett, Valerie A. Lawrence, and Steven L. Cohn
We propose that metoprolol, because its metabolism by CYP2D6 of cytochrome P-450 and reduced β -1 selectivity, may not be the optimal perioperative β -blocker.
- Effects of Preoxygenation on Desaturation Time during Hemorrhagic Shock in Pigs** 593
 Daniel Pehböck, Volker Wenzel, Wolfgang Voelckel, Kim Jonsson, Holger Herff, Martina Mittlböck, and Peter Nagele
This experimental hemorrhagic shock study shows that F_{iO_2} and the level of hemorrhagic shock, but not fluid resuscitation, are critical determinants of desaturation rate after apnea and underscores the importance of adequate preoxygenation.
- Sevoflurane Binds and Allosterically Blocks Integrin Lymphocyte Function-associated Antigen-1** 600
 Koichi Yuki, Nathan S. Astrof, Clay Bracken, Sulpicio G. Soriano, and Motomu Shimaoka
Sevoflurane inhibits lymphocyte function-associated antigen-1 by binding to the allosteric cavity. This allosteric mode of action has been previously observed in isoflurane and might explain the underlying mechanisms by which sevoflurane and isoflurane modulate the immune system.

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■ CRITICAL CARE MEDICINE

- ◆ **In Vivo Fluorescence-mediated Tomography for Quantification of Urokinase Receptor-dependent Leukocyte Trafficking in Inflammation** **610**
Jan Lärmann, Tim Frenzel, Anke Hahnenkamp, Christine Herzog, Anika Lorenz, Andrea U. Steinbicker, Simone Calmer, Thomas Harendza, Martina Schmitz, Frank Echtermeyer, Reinhard Hildebrand, Christoph Bremer, and Gregor Theilmeyer
We demonstrate the feasibility of noninvasive in vivo fluorescence-mediated-tomography imaging of phagocyte recruitment in two inflammatory mouse models using adoptive transfer of near-infrared fluorophore-labeled macrophages and neutrophils. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT
- Toll-like Receptor 4-Myeloid Differentiation Factor 88 Signaling Contributes to Ventilator-induced Lung Injury in Mice** **619**
Huihua Li, Xiaoli Su, Xuebin Yan, Karla Wasserloos, Wei Chao, A. Murat Kaynar, Zhao-Qian Liu, George D. Leikauf, Bruce R. Pitt, and Li-Ming Zhang
The current study shows that Toll-like receptor 4, via myeloid differentiation factor 88 signaling, plays an important role in the development of ventilator-induced lung injury, possibly through mechanisms involving nuclear factor- κ B and mitogen-activated protein kinase pathways.
- **Influence of Tidal Volume on Pulse Pressure Variations in Hypovolemic Ventilated Pigs with Acute Respiratory Distress-like Syndrome** **630**
Claes U. Wiklund, Denis R. Morel, H el ene Orbring-Wiklund, Jacques-Andre Romand, Vincent Piriou, Jean-Louis Teboul, and Karim Bendjelid
In healthy pigs, respiratory change in pulse pressure is a good indicator of hemorrhage. However, in pigs suffering from acute respiratory distress syndrome and ventilated with small tidal volumes, pulse pressure variation is not a satisfactory indicator of hypovolemia. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT

■ PAIN MEDICINE

- ◆ **Intraoperative Ketamine Reduces Perioperative Opiate Consumption in Opiate-dependent Patients with Chronic Back Pain Undergoing Back Surgery** **639**
Randy W. Loftus, Mark P. Yeager, Jeffrey A. Clark, Jeremiah R. Brown, William A. Abdu, Dilip K. Sengupta, and Michael L. Beach
Intraoperative use of preventative ketamine in opiate-dependent patients with a history of chronic pain reduces perioperative opiate use and opiate consumption and pain intensity at 6 weeks.
- **A Role for Acid-sensing Ion Channel 3, but Not Acid-sensing Ion Channel 2, in Sensing Dynamic Mechanical Stimuli** **647**
Jasenka Borzan, Chengshui Zhao, Richard A. Meyer, and Srinivasa N. Raja
Mice that lack acid-sensing ion channel 3, but not acid-sensing ion channel 2, show increased sensitivity to dynamic mechanical stimulation under physiological conditions. Neither channel is critical for mechanical hyperalgesia in neuropathic pain. SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT
- Block of Neuronal Na⁺ Channels by Antidepressant Duloxetine in a State-dependent Manner** **655**
Sho-Ya Wang, Joanna Calderon, and Ging Kuo Wang
Antidepressant duloxetine blocks the open state of Na⁺ channels preferentially. This duloxetine action could diminish aberrant persistent late Na⁺ currents and may be pertinent to its efficacy in neuropathic pain.
- ◆ **Cervical Epidural Pressure Measurement: Comparison in the Prone and Sitting Positions** **666**
Jee Y. Moon, Pyung-Bok Lee, Francis Sahngun Nahm, Yong-Chul Kim, and Jong-Bum Choi
Cervical epidural pressure was higher in prone than in sitting position and was not consistently negative even in sitting position. This suggests that the hanging drop technique is inappropriate for identifying the cervical epidural space in either position.

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Fentanyl-sparing Effect of Acetaminophen as a Mixture of Fentanyl in Intravenous Parent-/Nurse-controlled Analgesia after Pediatric

Ureteroneocystostomy

Jeong-Yeon Hong, Won Oak Kim, Bon Nyeo Koo, Jin Sun Cho, Eun H. Suk, and Hae Keum Kil

The present prospective, randomized, double-blinded study demonstrated that acetaminophen has a significant postoperative fentanyl-sparing effect and reduces side effects when combined with fentanyl in intravenous parent-/nurse-controlled analgesia for postoperative pediatric pain management.

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■ **CLASSIC PAPERS REVISITED**

Taming the Ketamine Tiger

Edward F. Domino

This article is a revisiting of original material published as: Domino EF, Chodoff P, Corsen G: Pharmacologic effects of CI-581, a new dissociative anesthetic, in man. Clin Pharmacol Ther 1965; 6:279–91.

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Susan K. Palmer

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■ **EDUCATION**

IMAGES IN ANESTHESIOLOGY

Transient Paraplegia after Anesthesia for Magnetic Resonance Imaging

Sydney Nykiel, Charles R. Schrock, and David J. Murray

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ORIGINAL INVESTIGATIONS IN EDUCATION

◆ **Clinical Teaching Improves with Resident Evaluation and Feedback**

Keith Baker

Faculty teaching scores increased after anesthesia residents provided feedback and evaluation of clinical teaching. Teaching improved with a time constant of 1 yr and was due primarily to increased scores by the lowest ranked teachers.

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CLINICAL CONCEPTS AND COMMENTARY

Inhibitors of Angiogenesis: New Hopes for Oncologists, New Challenges for Anesthesiologists

Nicolas Libert, Jean-Pierre Tourtier, Lionel Védrine, and Cyrus Chargari

While potentially improving overall survival, inhibitors of vascular endothelial growth factor are subject to considerable uncertainty concerning potential side effects. For anesthesiologists, this translates into new challenges when assessing perioperative risks in patients undergoing surgery.

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REVIEW ARTICLES

📖 **An Update on the Pathophysiology of Complex Regional Pain Syndrome**

Stephen Bruehl

The pathophysiology of complex regional pain syndrome is complex and multifactorial, involving both peripheral and central mechanisms. This review summarizes the current research literature regarding several key mechanisms that seem to contribute to this pain condition.

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Novel Oral Anticoagulants: Implications in the Perioperative Setting

Jerrold H. Levy, Nigel S. Key, and Marc S. Azran

The impact of the new, oral anticoagulants being developed for use in the perioperative setting will depend on the balance between efficacy and safety, improved convenience for patient and physician, and any potential cost-effectiveness benefits.

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CASE REPORT

🌐 **Trachea Rupture in Tenascin-X-deficient Type Ehlers–Danlos Syndrome**

Anna Besselink-Lobanova, Natasja J. G. Maandag, Nicol C. Voermans, Henricus F. M. van der Heijden, Johannes G. van der Hoeven, and Leo M. A. Heunks

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