



ON THE COVER:

Norepinephrine is a potential alternative to phenylephrine for maintaining blood pressure during spinal anesthesia for cesarean delivery with the advantage of less depression of maternal heart rate and cardiac output. In this issue of *ANESTHESIOLOGY*, Ngan Kee demonstrates the relative potencies of these two vasopressors in this context. The estimated dose equivalent to phenylephrine 100 µg was norepinephrine 8 µg.

- Ngan Kee: A Random-allocation Graded Dose-Response Study of Norepinephrine and Phenylephrine for Treating Hypotension during Spinal Anesthesia for Cesarean Delivery, p. 934

◆ THIS MONTH IN ANESTHESIOLOGY

1A

■ SCIENCE, MEDICINE, AND THE ANESTHESIOLOGIST

15A

■ INFOGRAPHICS IN ANESTHESIOLOGY

19A

◆ EDITORIAL VIEWS

Xenon and Cardioprotection: Is This the Light at the End of the Tunnel?

913

Y. Le Manach, S. Sibilio, and R. Whitlock

Synchrony and the Art of Mechanical Ventilation

915

E. C. Goligher

■ PERIOPERATIVE MEDICINE

CLINICAL SCIENCE

◆ ◆ ◆ **Effect of Xenon Anesthesia Compared to Sevoflurane and Total Intravenous Anesthesia for Coronary Artery Bypass Graft Surgery on Postoperative Cardiac Troponin Release: An International, Multicenter, Phase 3, Single-blinded, Randomized Noninferiority Trial**

918

J. Hoffland, A. Ouattara, J.-L. Fellahi, M. Gruenewald, J. Hazebroucq, C. Ecoffey, P. Joseph, M. Heringlake, A. Steib, M. Coburn, J. Amour, B. Rozec, I. de Liefde, P. Meybohm, B. Preckel, J.-L. Hanouz, L. Tritapepe, P. Tonner, H. Benhaoua, J. P. Roesner, and B. Bein, for the Xenon-CABG Study Group

This randomized prospective study compared xenon-, sevoflurane-, and propofol-based anesthesia in patients undergoing elective on-pump coronary artery bypass graft surgery. With regard to postoperative cardiac troponin I release, xenon was noninferior to sevoflurane in low-risk, on-pump coronary artery bypass graft surgery patients. Only with xenon was cardiac troponin I release less than with total intravenous anesthesia. Xenon anesthesia appeared safe and feasible. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

◆ Refers to This Month in Anesthesiology

◆ Refers to Editorial Views



This article has an Audio Podcast



See Supplemental Digital Content



CME Article



This article has a Video Abstract

- ◆ **A Random-allocation Graded Dose–Response Study of Norepinephrine and Phenylephrine for Treating Hypotension during Spinal Anesthesia for Cesarean Delivery** 934
 W. D. Ngan Kee

In this random-allocation, graded dose–response study, the relative potencies of the vasopressors were assessed by the proportion of full restoration of systolic blood pressure to the baseline in response to a bolus injection of one of six different doses of the vasopressors in 180 healthy patients undergoing spinal anesthesia for elective cesarean delivery. The estimated dose equivalent to phenylephrine 100 µg was norepinephrine 7.6 µg (95% CI, 6.3 to 9.6 µg).

- ◆ **Association between Intrapartum Magnesium Administration and the Incidence of Maternal Fever: A Retrospective Cross-sectional Study** 942
 E. M. S. Lange, S. Segal, C. Pancaro, C. A. Wong, W. A. Grobman, G. B. Russell, and P. Toledo

In a multivariable logistic regression, parturient women exposed to magnesium were less likely to develop fever.

- ◆ **Impact of Public Reporting of 30-day Mortality on Timing of Death after Coronary Artery Bypass Graft Surgery** 953
 M. Hua, D. C. Scales, Z. Cooper, R. Pinto, V. Moitra, and H. Wunsch

The authors compared patient outcomes in Massachusetts, a state with 30-day coronary artery bypass graft mortality reporting, and New York, a state with 30-day and all in-hospital mortality reporting. There were no meaningful differences in mortality rates near the 30-day reporting window in either state. This analysis suggests that a focus on reporting 30-day mortality was not associated with a difference in mortality near that reporting window cutoff.

BASIC SCIENCE

- 🌐 **Sevoflurane Acts on Ubiquitination–Proteasome Pathway to Reduce Postsynaptic Density 95 Protein Levels in Young Mice** 961
 H. Lu, N. Liufu, Y. Dong, G. Xu, Y. Zhang, L. Shu, S. G. Soriano, H. Zheng, B. Yu, and Z. Xie

Multiple sevoflurane exposures reduced postsynaptic density 95 protein (PSD-95) levels by increasing ubiquitination and proteosomal degradation; inhibition of the ubiquitin–proteasome pathway prevented PSD-95 loss and mitigated cognitive dysfunction. The results are consistent with the notion that anesthetic neurotoxicity may result, in part, by reducing PSD-95 levels decreasing neuroplasticity. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

- ◆ 🌐 **Anesthesia with Dexmedetomidine and Low-dose Isoflurane Increases Solute Transport *via* the Glymphatic Pathway in Rat Brain When Compared with High-dose Isoflurane** 976
 H. Benveniste, H. Lee, F. Ding, Q. Sun, E. Al-Bizri, R. Makaryus, S. Probst, M. Nedergaard, E. A. Stein, and H. Lu

Glymphatic transport was significantly greater in animals to whom dexmedetomidine and low dose isoflurane were administered in comparison to isoflurane alone. These data suggest that specific pharmacologic effects, especially suppression of noradrenergic neurotransmission, are more relevant in the increase in glymphatic transport than anesthesia-induced unconsciousness, *per se*. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

■ CRITICAL CARE MEDICINE

CLINICAL SCIENCE

- ◆ ◆ 🌐 **Prevalence and Prognosis Impact of Patient–Ventilator Asynchrony in Early Phase of Weaning according to Two Detection Methods** 989
 C. Rolland-Debord, C. Bureau, T. Poitou, L. Belin, M. Clavel, S. Perbet, N. Terzi, A. Kouatchet, T. Similowski, and A. Demoule

In 103 patients, asynchrony was assessed every 12 h after switching from full to partial ventilator support. Asynchrony was not associated with adverse outcome, and its incidence was less if monitoring airway pressure (or flow) patterns compared with electrical activity of the diaphragm. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

CONTENTS

■ PAIN MEDICINE

CLINICAL SCIENCE

◆ **Suprascapular and Interscalene Nerve Block for Shoulder Surgery: A Systematic Review and Meta-analysis**

998

N. Hussain, G. Goldar, N. Ragina, L. Banfield, J. G. Laffey, and F. W. Abdallah

A meta-analysis of 16 studies demonstrates suprascapular block results in 24-h morphine consumption and pain scores similar to interscalene block. Pain control may be better with interscalene blocks at 1 h postoperation. Suprascapular block is associated with fewer complications, in particular those that may limit the use of interscalene blocks in patients with obesity, sleep apnea, or pulmonary disease. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

■ EDUCATION

IMAGES IN ANESTHESIOLOGY

Proper Positioning of an Impella 2.5 and CP Heart Pump

1014

B. B. Anderson and C. D. Collard

Bilateral Upper Lobe Bronchi Originating from the Trachea

1015

K. A. Machovec, N. H. Greene, E. M. Raynor, and B. M. Taicher

Long-axis Ultrasonic Images of the Pediatric Larynx and Trachea with a Cuffed Endotracheal Tube

1016

K. Kayashima, T. Doi, R. Yamasaki, and K. Imai

REVIEW ARTICLE

Stem Cell-based Therapies for Sepsis

1017



C. Keane, M. Jerkic, and J. G. Laffey

Sepsis is a life-threatening syndrome resulting from microbial infection and is associated with an abnormal immune response and a mortality rate of 40%. Stem cells, particularly mesenchymal stem/stromal cells, offer considerable therapeutic potential for sepsis and may reduce sepsis severity *via* multiple mechanisms. Nevertheless, translational barriers exist that currently prevent realization of the therapeutic potential of mesenchymal stem/stromal cells for patients with sepsis.

MIND TO MIND

The Trip

1035

G. R. Strichartz

■ CORRESPONDENCE

Transfusion-associated Circulatory Overload or Degassing?

1037

C. Boucek

In Reply

D. J. Kor and L. Thalji

Situations Where Intravenous Lidocaine Should Not Be Used as an Analgesic Adjunct?

1038

J. V. Roth

In Reply

L. K. Dunn and M. E. Durieux

CONTENTS

Pain as a Predictor of Disability in Elderly Population 1038

H. G. Venkata, A. Y. Upadhyay, and G. Talari

In Reply

Y. Kaiho, Y. Sugawara, Y. Tomata, and I. Tsuji

Can Remote Ischemic Preconditioning Really Improve Long-term Kidney Outcomes after Cardiac Surgery? 1040

F.-S. Xue, Y.-Y. Liu, and H.-X. Li

In Reply

A. Zarbock and J. A. Kellum

What Is the Role of Cytokines during Ventilator-induced Lung Injury? 1041

D. Dreyfuss and G. Saumon

In Reply

S. Uhlig

Anesthesia, Consciousness, and Language 1042

C. S. Webster

Ideal Body Weight Is Not Really Ideal 1043

J. B. Brodsky, J. Ingrande, and H. J. M. Lemmens

■ **ACKNOWLEDGMENT** 1045

■ **ANNOUNCEMENTS** 1048

■ **ERRATUM** 1049

■ **ANESTHESIOLOGY REFLECTIONS FROM THE WOOD LIBRARY-MUSEUM**

Brown Describes Bolivian Coca-Leaf Chewing: A Remedy Gathered *versus* Altitude and Attitude? 941

George S. Bause

Christmas Suspense about Hosting the Columbian Exposition...and, Indirectly, the “Post-Graduate School of Anaesthesia” 952

George S. Bause

Racing Around: “Albany Dentist” G. E. Hill and “Vitalized Air” 975

George S. Bause

CONTENTS

From Brooklyn's Master Laughing Gasser: "Dr. Colton's Dentifrice... for Rigg's Disease" 988

George S. Bause

A "Dopeless" Diamond Belied Koca Nola's Cocaine-laced Content 1034

George S. Bause

CAREERS & EVENTS

21A

INSTRUCTIONS FOR AUTHORS

The most recently updated version of the Instructions for Authors is available at www.anesthesiology.org. Please refer to the Instructions for the preparation of any material for submission to ANESTHESIOLOGY.

Manuscripts submitted for consideration for publication must be submitted in electronic format. The preferred method is via the Journal's Web site (<http://www.anesthesiology.org>). Detailed directions for submissions and the most recent version of the Instructions for Authors can be found on the Web site (<http://www.anesthesiology.org>). Books and educational materials should be sent to Alan Jay Schwartz, M.D., M.S.Ed., Director of Education, Department of Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia, 34th Street and Civic Center Blvd., Room 9327, Philadelphia, Pennsylvania 19104-4399. Requests for permission to duplicate materials published in ANESTHESIOLOGY should be submitted in electronic format, to the Permissions Department (journalpermissions@lww.com). Advertising and related correspondence should be addressed to Advertising Manager, ANESTHESIOLOGY, Wolters Kluwer Health, Inc., Two Commerce Square, 2001 Market Street, Philadelphia, Pennsylvania 19103 (Web site: <http://www.wkacenter.com/>). Publication of an advertisement in ANESTHESIOLOGY does not constitute endorsement by the Society or Wolters Kluwer Health, Inc. of the product or service described therein or of any representations made by the advertiser with respect to the product or service.

ANESTHESIOLOGY (ISSN 0003-3022) is published monthly by Wolters Kluwer Health, Inc., 14700 Citicorp Drive, Bldg 3, Hagerstown, MD 21742. Business office: Two Commerce Square, 2001 Market Street, Philadelphia, PA 19103. Periodicals postage paid at Hagerstown, MD, and at additional mailing offices. Copyright © 2017, the American Society of Anesthesiologists, Inc.

Annual Subscription Rates: *United States*—\$930 Individual, \$2054 Institution, \$374 In-training. *Rest of World*—\$981 Individual, \$2281 Institution, \$374 In-training. Single copy rate \$207. Subscriptions outside of North America must add \$55 for airfreight delivery. Add state sales tax, where applicable. The GST tax of 7% must be added to all orders shipped to Canada (Wolters Kluwer Health, Inc.'s GST Identification #895524239, Publications Mail Agreement #1119672). Indicate in-training status and name of institution. Institution rates apply to libraries, hospitals, corporations, and partnerships of three or more individuals. Subscription prices outside the United States must be prepaid. Prices subject to change without notice. Subscriptions will begin with currently available issue unless otherwise requested. Visit us online at www.lww.com.

Individual and in-training subscription rates include print and access to the online version. Online-only subscriptions for individuals (\$308) and persons in training (\$308) are available to nonmembers and may be ordered by downloading a copy of the Online Subscription FAXback Form from the Web site, completing the information requested, and faxing the completed form to 301-223-2400. Institutional rates are for print only; online subscriptions are available via Ovid. Institutions can choose to purchase a print and online subscription together for a discounted rate. Institutions that wish to purchase a print subscription, please contact Wolters Kluwer Health, Inc., 14700 Citicorp Drive, Bldg 3, Hagerstown, MD 21742; phone: 800-638-3030; fax: 301-223-2400. Institutions that wish to purchase an online

subscription or online with print, please contact the Ovid Regional Sales Office near you or visit www.ovid.com/site/index.jsp and select Contact and Locations.

Address for non-member subscription information, orders, or change of address (except Japan): Wolters Kluwer Health, Inc., 14700 Citicorp Drive, Bldg 3, Hagerstown, MD 21742; phone: 800-638-3030; fax: 301-223-2400. In Japan, contact Wolters Kluwer Health Japan Co., Ltd., Foreca Mita Building 5th floor, 1-3-31 Mita Minato-ku, Tokyo, Japan 108-0073; phone: +81 3 5427 1969; email: journal@wkjapan.co.jp.

Address for member subscription information, orders, or change of address: Members of the American Society of Anesthesiologists receive the print and online journal with their membership. To become a member or provide a change of address, please contact the American Society of Anesthesiologists, 1061 American Lane, Schaumburg, Illinois 60173-4973; phone: 847-825-5586; fax: 847-825-1692; email: membership@ASAhq.org. For all other membership inquiries, contact Wolters Kluwer Health, Inc., Customer Service Department, P.O. Box 1610, Hagerstown, MD 21740; phone: 800-638-3030; fax: 301-223-2400.

Postmaster: Send address changes to ANESTHESIOLOGY, P.O. BOX 1610, Hagerstown, MD 21740.

Advertising: Please contact Hilary Druker, Advertising Field Sales Representative, Health Learning, Research & Practice, Medical Journals, Wolters Kluwer Health, Inc.; phone: 609-304-9187; e-mail: Hilary.Druker@wolterskluwer.com. For classified advertising: Joe Anzuena, Recruitment Advertising Representative, Wolters Kluwer Health, Inc., Two Commerce Square, 2001 Market Street, Philadelphia, PA 19103; phone: 215-521-8532; fax: 215-701-2410; e-mail: Joe.Anuena@wolterskluwer.com.