



## 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  $\mu\text{g}$  was norepinephrine 8  $\mu\text{g}$ .

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

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### Synchrony and the Art of Mechanical Ventilation

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## ■ 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

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*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.

### ◆ 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  $\mu\text{g}$  was norepinephrine 7.6  $\mu\text{g}$  (95% CI, 6.3 to 9.6  $\mu\text{g}$ ).

◆ Refers to This Month in Anesthesiology

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This article has an Audio Podcast



See Supplemental Digital Content



CME Article



This article has a Video Abstract

- ◇ **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 proteasomal 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.

- ◇ 🌐 **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*.

## ■ 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.

## ■ 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.

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#### 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.

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