



ON THE COVER:

Injection of local anesthetic intraneurally occurs commonly during peripheral nerve block, but whether this or the common practice of supplementing inadequate block with a more distal block causes risks to patients is uncertain:

- Sala-Blanch *et al.*: No Clinical or Electrophysiologic Evidence of Nerve Injury after Intraneural Injection during Sciatic Popliteal Block, p. 589
- Nader *et al.*: Nerve Stimulator-guided Supplemental Popliteal Sciatic Nerve Block after a Failed Sciatic Block Does Not Increase the Incidence of Transient Postoperative Neurologic Sequelae, p. 596

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A Single Phenylalanine Residue in the Main Intracellular Loop of $\alpha 1$ γ -Aminobutyric Acid Type A and Glycine Receptors Influences Their Sensitivity to Propofol

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Gustavo Moraga-Cid, Gonzalo E. Yevenes, Günther Schmalzing, Robert W. Peoples, and Luis G. Aguayo

The large intracellular loop connecting transmembrane domains 3 and 4 of both glycine and γ -aminobutyric type A receptors has a conserved single phenylalanine residue (F380 and F385, respectively) that influences its sensitivity to propofol.

Hemorrhagic Shock-induced Endothelial Cell Activation in a Spontaneous Breathing and a Mechanical Ventilation Hemorrhagic Shock Model Is Induced by a Proinflammatory Response and Not by Hypoxia

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Matijs van Meurs, Francis M. Wulfert, Rianne M. Jongman, Martin Schipper, Martin C. Houwertjes, Michiel Vaneker, Gert Jan Scheffer, Luc J. Teppema, Leon P. H. J. Aarts, Peter Heeringa, Jan G. Zijlstra, and Grietje Molema

Hemorrhagic shock leads to endothelial activation in kidney and lung, which is paralleled by a proinflammatory cytokine response. This activation is not changed by mechanical ventilation during shock and is not caused by hypoxia alone.

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CME CME Article

- Sevoflurane Reduces Leukocyte and Platelet Adhesion after Ischemia-Reperfusion by Protecting the Endothelial Glycocalyx** 483
Daniel Chappell, Bernhard Heindl, Matthias Jacob, Thorsten Annecke, Congcong Chen, Markus Rehm, Peter Conzen, and Bernhard F. Becker
- Increases in shedding of the glycocalyx and in adhesion of leukocytes and platelets after myocardial ischemia-reperfusion are significantly reduced by pretreatment with sevoflurane. Protection of the glycocalyx might be a further facet of the cardioprotective properties of volatile anesthetics.
- ◇ **High Oxygen Partial Pressure Decreases Anemia-induced Heart Rate Increase Equivalent to Transfusion** 492
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- High inspired oxygen reverses the increased heart rate induced by isovolemic anemia equivalent to increasing hemoglobin concentration by 3 g/dl.
- Volatile Anesthetics Protect Cancer Cells against Tumor Necrosis Factor-related Apoptosis-inducing Ligand-induced Apoptosis *via* Caveolins** 499
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- Brief isoflurane exposure leads to resistance against tumor necrosis factor-related apoptosis-inducing ligand-induced apoptosis *via* caveolin-1–dependent mechanisms, suggesting that caveolin-1–expressing cancer cells may exhibit resistance against postoperative anticancer therapy.
- 🌐 **Sevoflurane Protects Ventricular Myocytes from Ca²⁺ Paradox-mediated Ca²⁺ Overload by Blocking the Activation of Transient Receptor Potential Canonical Channels** 509
Akiko Kojima, Hirotohi Kitagawa, Mariko Omatsu-Kanbe, Hiroshi Matsuura, and Shuichi Nosaka
- Sevoflurane protects ventricular myocytes from the Ca²⁺ paradox, an important phenomenon associated with Ca²⁺ overload-mediated myocardial injury, by preserving the sarcoplasmic reticulum Ca²⁺ content and by blocking the transient receptor potential canonical channels.
- ◇ **Influence of Erythrocyte Transfusion on the Risk of Acute Kidney Injury after Cardiac Surgery Differs in Anemic and Nonanemic Patients** 523
Keyvan Karkouti, Duminda N. Wijesundera, Terrence M. Yau, Stuart A. McCluskey, Christopher T. Chan, Pui-Yuen Wong, and W. Scott Beattie
- In a cohort of patients who received up to three units of erythrocytes during cardiac surgery, those with preexisting anemia were more susceptible to transfusion-related acute kidney injury than nonanemic patients.
- 🌐 **Isoflurane Differentially Modulates Mitochondrial Reactive Oxygen Species Production *via* Forward *versus* Reverse Electron Transport Flow: Implications for Preconditioning** 531
Naoyuki Hirata, Yon Hee Shim, Danijel Pravidic, Nicole L. Lohr, Philip F. Pratt, Jr., Dorothee Weihrauch, Judy R. Kersten, David C. Wartier, Zeljko J. Bosnjak, and Martin Bienengraeber
- Interaction of isoflurane with complex I in mitochondria is responsible not only for reactive oxygen species generation at complex I and III, but also mitigates harmful reverse electron flow-induced reactive oxygen species production.

■ CRITICAL CARE MEDICINE

- ◆ **An Increase in Aortic Blood Flow after an Infusion of 100 ml Colloid over 1 Minute Can Predict Fluid Responsiveness: The Mini-fluid Challenge Study** 541

Laurent Muller, Medhi Toumi, Philippe-Jean Bousquet, Béatrice Riu-Poulenc, Guillaume Louart, Damien Candela, Lana Zoric, Carey Suehs, Jean-Emmanuel de La Coussaye, Nicolas Molinari, and Jean-Yves Lefrant, in the AzuRéa Group

During acute circulatory failure and low volume ventilation, a 10% increase of subaortic velocity time index (noninvasively measured by transthoracic echocardiography) after infusion of 100 ml colloid over 1 min accurately predicts fluid responsiveness.

- ◆ **Comparison of the Accuracy of Noninvasive Hemoglobin Monitoring by Spectrophotometry (SpHb) and HemoCue[®] with Automated Laboratory Hemoglobin Measurement** 548

Lionel Lamhaut, Roxana Apriotesei, Xavier Combes, Marc Lejay, Pierre Carli, and Benoît Vivien

Taking automated laboratory hemoglobin measurement as a reference, the authors show that continuous online hemoglobin monitoring with the Radical-7[®] (Masimo Corp., Irvine, CA) system gives lower readings than does the HemoCue[®] 201+ (HemoCue, Ängelholm, Sweden) system for assessment of hemoglobin concentration during hemorrhagic surgery.

- ◆ **MyD88 and Trif Signaling Play Distinct Roles in Cardiac Dysfunction and Mortality during Endotoxin Shock and Polymicrobial Sepsis** 555

Yan Feng, Lin Zou, Ming Zhang, Yan Li, Chan Chen, and Wei Chao

Using genetically modified mice, this study demonstrates that MyD88 signaling, but not Trif signaling, plays a predominant role in cardiac dysfunction and mortality in polymicrobial sepsis. Both MyD88 and Trif are essential for endotoxin-induced cardiac depression.

- ◆ **Free Cortisol and Accuracy of Total Cortisol Measurements in the Diagnosis of Adrenal Insufficiency in Brain-dead Patients** 568

Armelle Nicolas-Robin, Jérôme D. Barouk, Elsa Darnal, Bruno Riou, and Olivier Langeron

In brain-dead patients, total baseline cortisol measurement, instead of free cortisol measurement, is accurate and sufficient to diagnose adrenal insufficiency, even if low albumin or low corticosteroid-binding globulin concentration occurs.

■ PAIN MEDICINE

- ◆ **Perioperative Single Dose Systemic Dexamethasone for Postoperative Pain: A Meta-analysis of Randomized Controlled Trials** 575

Gildásio S. De Oliveira, Jr., Marcela D. Almeida, Honorio T. Benzon, and Robert J. McCarthy

Dexamethasone at doses >0.11 mg/kg decreases postoperative pain and reduces opioid consumption, whereas doses <0.1 mg/kg produces variable analgesia. Dexamethasone can be used effectively in multimodal analgesia strategies to reduce postoperative pain and opioid consumption.

- ◆ **No Clinical or Electrophysiologic Evidence of Nerve Injury after Intraneural Injection during Sciatic Popliteal Block** 589

Xavier Sala-Blanch, Ana M. López, Jaume Pomés, Josep Valls-Sole, Ana I. García, and Admir Hadzic

Intraneural injection during nerve stimulator–guided sciatic block at the popliteal fossa may be a common occurrence. This study used clinical, imaging, and electrophysiologic measures to evaluate the occurrence of any subclinical neurologic injury in 17 patients after intraneural injection during sciatic popliteal block. After achieving tibial nerve response by nerve stimulation (0.3–0.5 mA; 2 Hz; 0.1 ms), 20 ml of a mixture of 1.25% mepivacaine and radio-opaque contrast (2 ml) were injected. Sixteen injections (94%, 95% CI: 71–100%) met criteria for an intraneural injection. No evidence of neurologic dysfunction indicating injury to the nerve was detected. The authors conclude that nerve stimulator–guided sciatic block at the popliteal fossa often results in intraneural injection; however, this may not lead to clinical or electrophysiologic nerve injury.

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Nerve Stimulator-guided Supplemental Popliteal Sciatic Nerve Block after a Failed Sciatic Block Does Not Increase the Incidence of Transient Postoperative Neurologic Sequelae 596

Antoun Nader, Mark C. Kendall, Robert Doty, Jr., Alexander DeLeon, Edward Yagmour, Armen S. Kelikian, and Robert J. McCarthy

The incidence of postoperative neurologic symptoms after a failed subgluteal sciatic nerve block with a supplemental popliteal sciatic nerve block was not increased in comparison with a single-injection, subgluteal-parabiceps sciatic nerve block.

Biphasic Activation of Extracellular Signal-regulated Kinase in Anterior Cingulate Cortex Distinctly Regulates the Development of Pain-related Anxiety and Mechanical Hypersensitivity in Rats after Incision 604

Ru-Ping Dai, Chang-Qi Li, Jian-Wei Zhang, Fang Li, Xu-Dan Shi, Jian-Yi Zhang, and Xin-Fu Zhou

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Marie-Christine Ross-Huot, André Laferrière, Cho Min Gi, Mina Khorashadi, Thomas Schrickler, and Terence J. Coderre

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Maurice S. Albin

This article is a revisiting of original material published as: Albin MS, Carroll RG, Maroon JC: Clinical considerations concerning detection of venous air embolism. *Neurosurgery* 1978; 3:380–4

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Brian M. Gilliss, Mark R. Looney, and Michael A. Gropper

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