



ON THE COVER:

Acute kidney injury is a common complication after cardiac surgery with cardiopulmonary bypass (CPB). In this issue of *ANESTHESIOLOGY*, Lannemyr *et al.* evaluated the effects of CPB on renal oxygenation in patients undergoing cardiac surgery. They conclude that cardiopulmonary bypass impairs renal oxygenation due to renal vasoconstriction and hemodilution during and after CPB. In an accompanying Editorial View, Billings *et al.* explains the implications of these findings in the context of the complexities of oxygenation of the kidney.

- Lannemyr *et al.*: Effects of Cardiopulmonary Bypass on Renal Perfusion, Filtration, and Oxygenation in Patients Undergoing Cardiac Surgery, p. 205
- Billings *et al.*: Renal Oxygen Flux during Cardiopulmonary Bypass; Tubular Damage to Preserve Glomerular Filtration—What’s a Kidney to Do? p. 199

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CLINICAL SCIENCE

◆◆ Effects of Cardiopulmonary Bypass on Renal Perfusion, Filtration, and Oxygenation in Patients Undergoing Cardiac Surgery

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L. Lannemyr, G. Bragadottir, V. Krumbholz, B. Redfors, J. Sellgren, and S.-E. Ricksten

Cardiopulmonary bypass impairs renal oxygenation due to renal vasoconstriction and hemodilution during and after cardiopulmonary bypass, accompanied by an increase in N-acetyl-β-d-glucosaminidase.

◆ Refers to This Month in Anesthesiology

◆ Refers to Editorial Views



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- ◆◆ **Incidence of Connected Consciousness after Tracheal Intubation: A Prospective, International, Multicenter Cohort Study of the Isolated Forearm Technique** 214
R. D. Sanders, A. Gaskell, A. Raz, J. Winders, A. Stevanovic, R. Rossaint, C. Boncyk, A. Defresne, G. Tran, S. Tasbihgou, S. Meier, P. E. Vlisides, H. Fardous, A. Hess, R. M. Bauer, A. Absalom, G. A. Mashour, V. Bonhomme, M. Coburn, and J. Sleigh
- In a prospective, multicenter study of the incidence of connected consciousness in response to tracheal intubation in 260 anesthetized surgical patients, 4.6% had connected consciousness detected by the isolated forearm technique, none of whom had explicit recall. Connected consciousness was more common in younger patients and those less deeply anesthetized as detected by depth of anesthesia monitors.
- ◆ **Impact of Methylprednisolone on Postoperative Quality of Recovery and Delirium in the Steroids in Cardiac Surgery Trial: A Randomized, Double-blind, Placebo-controlled Substudy** 223
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- High-dose intraoperative methylprednisolone neither reduces delirium nor improves the quality of recovery in high-risk cardiac surgical patients.
- ◆ **Safety of Perioperative Glucocorticoids in Elective Noncardiac Surgery: A Systematic Review and Meta-analysis** 234
A. J. Toner, V. Ganeshanathan, M. T. Chan, K. M. Ho, and T. B. Corcoran
- Glucocorticoids did not impact on any wound infection (odds ratio, 0.84; 95% CI, 0.62 to 1.15) or length of stay (weighted mean difference, -0.27 days; CI, -1.37 to 0.84). Glucocorticoids slightly increased peak postoperative glucose concentrations by 20 mg/dl (CI, 11 to 29; $P < 0.001$), an amount that is probably not clinically important. Single-dose steroid administration for prevention of nausea appears safe.
- ◆ **Arterial Pressure Variation in Elective Noncardiac Surgery: Identifying Reference Distributions and Modifying Factors** 249
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- Systolic pressure variation (SPV) and pulse pressure variation reference distributions were established. Nonsupine positioning and preoperative β blocker were independently associated with altered SPV and pulse pressure variation, whereas ventilator tidal volume more than 8 ml/kg ideal body weight and peak inspiratory pressure more than 16 cm H₂O demonstrated independent associations for SPV only.
- ◆ **Changes in Stroke Volume Induced by Lung Recruitment Maneuver Predict Fluid Responsiveness in Mechanically Ventilated Patients in the Operating Room** 260
M. Biais, R. Lanchon, M. Sesay, L. Le Gall, B. Pereira, E. Futier, and K. Nouette-Gaulain
- This study suggests that the magnitude of stroke volume decrease during lung recruitment maneuver may predict preload responsiveness in mechanically ventilated patients in the operating room.
- ◆ **Intravenous Amisulpride for the Prevention of Postoperative Nausea and Vomiting: Two Concurrent, Randomized, Double-blind, Placebo-controlled Trials** 268
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- In two essentially identical, randomized, double-blind, placebo-controlled, parallel-group phase III studies performed in adult inpatients undergoing elective surgery under general anesthesia and having at least two of the four Apfel risk factors for postoperative nausea and vomiting (PONV), a single 5-mg dose of amisulpride was safe and superior to placebo in reducing the incidence of PONV.
- ◆ **Perioperative Outcomes and Management in Pediatric Complex Cranial Vault Reconstruction: A Multicenter Study from the Pediatric Craniofacial Collaborative Group** 276
P. A. Stricker, S. M. Goobie, F. P. Cladis, C. M. Haberkern, P. M. Meier, S. K. Reddy, T. T. Nguyen, L. Cai, M. Polansky, P. Szmuk, and the Pediatric Craniofacial Collaborative Group
- The majority of patients received blood transfusion and were admitted to the intensive care unit postsurgery. Notable complications included cardiac arrest, hypotension, seizures, coagulopathy, and large-volume blood transfusion. There were significant variations in perioperative management practices and in-hospital outcomes. These results serve as a platform for future comparisons of management practice.

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Sevoflurane transiently increased excitatory transmission at 6 h post exposure in male but not in female mice. By contrast, inhibitory transmission was decreased in male mice but increased in female mice at 6 h post exposure. No changes in behavioral function were observed. The results suggest that the transient changes induced by sevoflurane in excitatory and inhibitory transmission do not impact long-term cognitive function.

■ CRITICAL CARE MEDICINE

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- Transient Receptor Potential Vanilloid 4 and Serum Glucocorticoid–regulated Kinase 1 Are Critical Mediators of Lung Injury in Overventilated Mice *In Vivo*** 300
L. Michalick, L. Erfnanda, U. Weichelt, M. van der Giet, W. Liedtke, and W. M. Kuebler

By using animal genetic models and pharmacologic approaches, the authors found attenuated ventilator-induced lung injury (VILI) by inhibition of transient receptor potential vanilloid (TRPV) 4 and involvement of serum glucocorticoid–regulated kinase (SGK) 1 in the TRPV4 Ca^{2+} -mediated VILI through molecular interaction and phosphorylation of TRPV4 at serine 824. The results of this study suggest TRPV4 and SGK1 as potential targets for the treatment of VILI.

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D. I. Mclsaac, C. J. L. McCartney, and C. van Walraven

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