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# ANESTHESIOLOGY

Volume 138

Issue 4

April 2023

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## Perioperative Medicine

### CLINICAL SCIENCE

◆◆ Postoperative Pulmonary Complications in the ENIGMA II Trial: A *Post Hoc* Analysis

*P. J. Peyton, G. Liskaser, A. Ho, H. Marsh, C. Etherington, F. Torlot, M. Desai, G. Perrett, B. Chee, K. Leslie, P. S. Myles* .....354

This study reanalyzed the ENIGMA II data from 10 Australian centers (approximately 33% of the total multinational cohort) to compare the incidence of atelectasis in the two treatment groups. In contrast to the original ENIGMA trial, there was a lower incidence of atelectasis with use of nitrous oxide. There was no effect of nitrous oxide on the secondary outcomes of pneumonia, combined pulmonary complications, or hospital length of stay.

◆ Immediate Hypersensitivity to Chlorhexidine: Experience from an Allergy Center in China

*H. Xiao, H. Zhang, Q. Jia, F. Xu, J. Meng* .....364

In a study from China, most allergic reactions to chlorhexidine were due to skin disinfectant for vascular cannulation and occurred repeatedly in most patients before it was recognized. This report further emphasizes the need for awareness of the potential allergenicity of chlorhexidine in a perioperative setting or after vascular cannulation.

### BASIC SCIENCE

◆◆ GABAergic Signaling during Spinal Cord Stimulation Reduces Cardiac Arrhythmias in a Porcine Model

*K. Howard-Quijano, Y. Kuwabara, T. Yamaguchi, K. Roman, S. Salavatian, B. Taylor, A. Mahajan* .....372

This study of Yorkshire pigs found that spinal cord stimulation reduces myocardial ischemia–reperfusion–induced myocardial sympathetic excitation and ventricular arrhythmias through  $\gamma$ -aminobutyric acid–mediated pathways in the thoracic spinal cord.

◆◆ Intergenerational Perioperative Neurocognitive Disorder in Young Adult Male Rats with Traumatic Brain Injury

*L.-S. Ju, J. Zhu, J. O. Brant, T. E. Morey, N. Gravenstein, C. N. Seubert, T. Vasilopoulos, B. Setlow, A. E. Martynuk* .....388

Repeated exposures to sevoflurane induced a statistically significant increase in neuroinflammation and stress response alongside decreased neurocognitive performance in 2-month-old male rats with moderate traumatic brain injury when compared to nontraumatized counterparts. Comparable abnormalities were observed in unexposed male but not female offspring of sevoflurane-exposed male rats with traumatic brain injury. These laboratory observations suggest that traumatic brain injury

◆ Refers to This Month in ANESTHESIOLOGY

◆ Refers to Editorial

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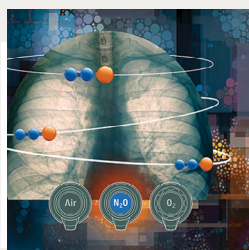
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**ON THE COVER:** Nitrous oxide ( $N_2O$ ) promotes absorption atelectasis in poorly ventilated lung segments at high inspired concentrations. The original ENIGMA Trial found a higher incidence of postoperative pulmonary complications and wound sepsis with  $N_2O$  anesthesia in major surgery compared with  $FiO_2$  0.8 without  $N_2O$ . In this issue of ANESTHESIOLOGY, Peyton *et al.* collected post hoc data to determine whether the incidences of atelectasis and pneumonia were higher with in patients receiving  $N_2O$  who were recruited to the Australian cohort of the ENIGMA II trial. In an accompanying editorial, Gama de Abreu and Sessler discuss the conflicting evidence on nitrous oxide and postoperative pulmonary complications. Cover illustration: A. Johnson, Vivo Visuals Studio.

- Peyton *et al.*: Postoperative Pulmonary Complications in the ENIGMA II Trial: A *Post Hoc* Analysis, p. 354
- Gama de Abreu and Sessler: Nitrous Oxide and Postoperative Pulmonary Complications: Conflicting Evidence, p. 345

may be a risk factor for developing perioperative neurocognitive disorder and raise the possibility of a sex-specific intergenerational effect of this pathology.

◆ **Mouse Model of Spinal Cord Hypoperfusion with Immediate Paralysis Caused by Endovascular Repair of Thoracic Aortic Aneurysm**

*H. Kelani, K. Corps, S. Mikula, L. C. Fisher, M. T. Shalaan, S. Sturgill, M. T. Ziolo, M. Abdel-Rasoul, D. M. Basso, H. Awad*.....403

In mice, double ligation of three pairs alongside single ligation of two pairs of intercostal arteries led to reproducible spinal cord hypoperfusion and to an immediate paralysis of variable severity below the ligation level. The variable degree of deficit and the gradual improvement throughout a 2-week follow-up period in mice mimics the recovery process in humans presenting with spinal cord ischemia after endovascular repair of thoracic aortic aneurysm.

**Critical Care Medicine**

**BASIC SCIENCE**

◆ **Lung Injury Is Induced by Abrupt Increase in Respiratory Rate but Prevented by Recruitment Maneuver in Mild Acute Respiratory Distress Syndrome in Rats**

*P. H. Xavier, A. C. F. Fonseca, L. A. Gonçalves, G. C. de Sousa, M. C. da Silva, R. F. de M. Sacramento, C. dos S. Samary, M. Medeiros, F. F. Cruz, V. L. Capelozzi, N. S. Felix, P. Pelosi, J. J. Marini, P. R. M. Rocco, P. L. Silva*.....420

A rat model of mild acute lung injury, incorporating either a gradual or an abrupt increase in respiratory rate (with a preceding recruitment maneuver) greater than two different adaptation periods, evaluated postmortem histologic alveolar damage along with markers of lung inflammation, endothelial cell damage, and gene expression. A gradual increase in respiratory rate resulted in evidence of less lung damage. Biomarkers were higher with abrupt increases as well, although a preceding recruitment maneuver ameliorated this increase.

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