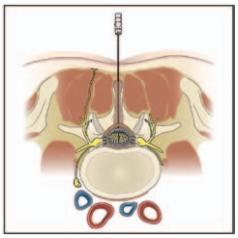
THIS MONTH IN

ANESTHESIOLOGY

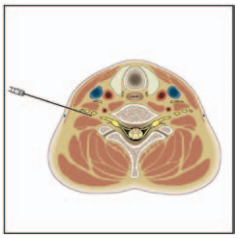


535 Practice Guidelines for the Prevention, Detection, and Management of Respiratory Depression Associated with Neuraxial Opioid Administration: An Updated Report by the American Society of Anesthesiologists Task Force on Neuraxial Opioids and the American Society of Regional Anesthesia and Pain Medicine (Practice Parameters)

These Practice Guidelines update the "Practice Guidelines for the Prevention, Detection, and Management of Respiratory Depression Associated with Neuraxial Opioid Administration: An Updated Report by the American Society of Anesthesiologists Task Force on Neuraxial Opioids," adopted by the American Society of Anesthesiologists in 2008 and published in 2009. They provide basic recommendations that are supported by synthesis and analysis of the current literature, expert and practitioner opinion, open forum commentary, and clinical feasibility data. They focus on management of patients receiving epidural or spinal opioids in inpatient or ambulatory settings. Their purposes are to improve patient safety and enhance the quality of anesthetic care by reducing the incidence and severity of neuraxial opioid-related respiratory depression and to reduce the incidence and severity of adverse outcomes related to reduced respiratory rate or oxygen concentration. *(Summary: M.J. Avram. Illustration: G. Nelson [reproduced with permission from Rathmell JP:* Atlas of Image-guided Intervention in Regional Anesthesia and Pain Medicine, *2nd edition. Philadelphia, Lippincott, Williams & Wilkins, 2012].)*

561 Providing Anesthesia Care in Resource-limited Settings: A 6-year Analysis of Anesthesia Services Provided at Médecins Sans Frontières Facilities

There is a severe shortage of trained anesthesia providers in low- and middle-income countries. Inadequate resources often lead to less-than-ideal circumstances for the practice of safe and effective anesthesia. Médecins Sans Frontières (MSF, Doctors Without Borders) has been providing surgical care to patients in more than 70 countries for over 40 yr. MSF anesthesia providers include physician anesthesiologists, nurse anesthetists, and local nurses trained by MSF to provide anesthesia. A standardized set of essential equipment and medications is provided for each mission to enable anesthesia care delivery and management of potential complications. A retrospective review of anesthetic procedures performed at MSF facilities from 2008 until 2014 found a wide range of anesthesia procedures can be carried out safely in resource-limited settings with resources such as those provided by MSF. *See the accompanying Editorial View on* **page 521***. (Summary: M.J. Avram. Photo illustration: A. Johnson, Vivo Visuals, with images from Médecins Sans Frontières.)*

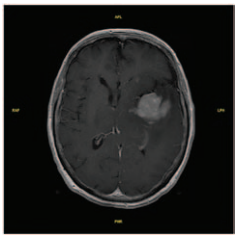


683 IV and Perineural Dexmedetomidine Similarly Prolong the Duration of Analgesia after Interscalene Brachial Plexus Block: A Randomized, Three-arm, Triple-masked, Placebo-controlled Trial

The joint hypothesis that dexmedetomidine, added to local anesthetic solution or infused intravenously, will prolong the duration of single-injection interscalene brachial plexus block analgesia and reduce the 24-h cumulative postoperative opioid consumption was tested in a randomized, triple-masked, placebo-controlled clinical trial. Ninety-nine patients undergoing elective unilateral arthroscopic shoulder surgery using standardized general anesthetic and postoperative analgesic regimens, including a single-injection interscalene brachial plexus block, were randomized to receive interscalene brachial plexus block using 15 ml ropivacaine 0.5% with 0.5 μg/kg dexmedetomidine administered perineurally, intravenously, or neither. Dexmedetomidine, whether administered perineurally or intravenously, was an effective local anesthetic adjunct capable of selectively prolonging the duration of interscalene brachial plexus block analgesia and reducing cumulative analgesic consumption at 24 h without prolonging the duration of motor blockade. *(Summary: M.J. Avram. Illustration: G. Nelson [reproduced with permission from Neal JM, Rathmell JP:* Complications in Regional Anesthesia and Pain Medicine, *2nd edition. Philadelphia, Lippincott, Williams & Wilkins, 2012].)*

608 Anesthetic Care for Orthopedic Patients: Is There a Potential for Differences in Care?

The hypothesis that significant differences in anesthetic care provided to members of different patient groups and in different healthcare settings exist was tested in a retrospective study using data on 1,062,152 elective hip and knee arthroplasty procedures performed in 540 hospitals from 2006 through 2013 extracted from the Premier Perspective database. Of those, 22.2% received a neuraxial anesthetic and 17.9% a peripheral nerve block. Multilevel multivariable logistic regression models measured associations between patient/hospital factors and neuraxial anesthesia or peripheral nerve block use. Neuraxial anesthesia and peripheral nerve block were less likely to be used in Black and Hispanic patients and patients on Medicaid or Medicare or without insurance. Multilevel models found a substantial role of unspecified hospital level effects. Patient preferences may play a role in choice of anesthetic technique. *(Summary: M.J. Avram. Image: J.P. Rathmell.)*



598 Mild Sedation Exacerbates or Unmasks Focal Neurologic Dysfunction in Neurosurgical Patients with Supratentorial Brain Mass Lesions in a Drug-specific Manner

The hypothesis that focal neurologic deficits of patients with frontal–parietal–temporal brain mass lesions are unmasked or exacerbated by sedation produced by any mechanism was tested in 124 elective neurosurgery patients with supratentorial mass lesions. Patients were randomly assigned to be sedated with propofol, midazolam, fentanyl, or dexmedetomidine, titrated to an Observer's Assessment of Alertness/Sedation Scale score of 4 (lethargic). When sedation was achieved, neurologic function was evaluated with the National Institutes of Health Stroke Scale. Mild sedation by midazolam or propofol was more likely to cause focal neurologic deficits in patients with supratentorial mass lesions than was sedation by fentanyl or dexmedetomidine. The unmasked or exacerbated neurologic function deficits were mainly limb motor dysfunction and ataxia. Patients with high-grade gliomas were more susceptible to sedation-induced neurologic dysfunction. *(Summary: M.J. Avram. Image: J.P. Rathmell.)*

570 Preoperative Score to Predict Postoperative Mortality (POSPOM): Derivation and Validation

A preoperative risk score that could be used to predict postoperative in-hospital mortality, based on objective and readily available preoperative clinical information, was developed and validated. Surgical procedures requiring anesthesia performed at French centers that performed more than 500 procedures on patients aged 18 yr or older during 2010 were identified. The cohort was split at the center level into derivation (2,717,902 patients from 479 centers) and validation (2,789,932 patients from 479 centers) cohorts. A logistic regression model that included 17 variables was constructed from which an easy-to-use score (Pre-Operative Score to predict PostOperative Mortality, POSPOM) was developed. POSPOM showed excellent discrimination in both derivation (c-statistic: 0.944) and validation (c-statistic: 0.929) cohorts. POPSOM had good calibration in the validation cohort for predicted probabilities ranging from 1% to 10%. *See the accompanying Editorial View on* ***page 523****.* *(Summary: M.J. Avram. Photo: ©Thinkstock.)*

674 Extracorporeal Carbon Dioxide Removal Enhanced by Lactic Acid Infusion in Spontaneously Breathing Conscious Sheep

An enhanced extracorporeal carbon dioxide removal technique consisting of regional blood acidification (acid load carbon dioxide removal, $ALCO_2R$), based on infusion of lactic acid extracorporeally into the blood entering the membrane lung (ML), was developed. Ventilation and energy expenditure during $ALCO_2R$ was compared with that during standard extracorporeal carbon dioxide removal in six spontaneously breathing, freely fed, healthy ewes to test the hypothesis that $ALCO_2R$ enhances carbon dioxide removal of the ML and reduces minute ventilation. Feasibility and effectiveness of extracorporeal blood acidification in enhancing carbon dioxide removal by a ML was confirmed, but infusion of lactic acid was associated with an increase in energy expenditure, such that $ALCO_2R$ use was not associated with a decrease in the animals' minute ventilation. $ALCO_2R$ might decrease ventilatory needs if associated with control of metabolism. *See the accompanying Editorial View on* ***page 532****.* *(Summary: M.J. Avram. Photo illustration: J.P. Rathmell.)*

723 Survival after Perioperative Cardiopulmonary Resuscitation: Providing an Evidence Base for Ethical Management of Do-not-resuscitate Orders (Review Article)

A systematic review of the literature was conducted to quantify survival after any given attempt at intraoperative cardiopulmonary resuscitation among the general surgical population to provide evidence for ethical management of do-not-resuscitate orders during anesthesia and surgery. Survival within the first 24 h after perioperative cardiopulmonary resuscitation ranged from 32% to 56% in the seven studies included in this review. Survival was 32% to 35% at hospital discharge, 37% at 30 days postoperatively, and 30% at 90 days postoperatively. Favorable neurologic outcome was observed in 64% to 67% of survivors at hospital discharge and in 45% of survivors at 90 days follow-up. The foreseeable outcome after resuscitation in the operating room may be better than that a patient had in mind when filling out their initial do-not-resuscitate order. *(Summary: M.J. Avram. Photo: J.P. Rathmell.)*