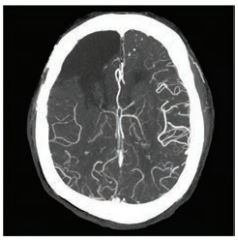
THIS MONTH IN

ANESTHESIOLOGY

36 Goal-directed Fluid Therapy Does Not Reduce Primary Postoperative Ileus after Elective Laparoscopic Colorectal Surgery: A Randomized Controlled Trial

Primary postoperative ileus is a major determinant of in-hospital recovery after colorectal surgery. Both fluid overload and hypovolemia can affect recovery of bowel function. To test the hypothesis that patients treated with fluid therapy based on objective measures of hypovolemia (goal-directed fluid therapy, GDFT) would experience less primary postoperative ileus than those receiving fluid therapy based on traditional principles, 128 patients undergoing laparoscopic colorectal surgery were randomly assigned to receive GDFT based on near-maximal stroke volume optimization or fluid therapy based on traditional principles. Intraoperative GDFT did not reduce the incidence of primary postoperative ileus in the context of a well-established Enhanced Recovery After Surgery program. GDFT had been shown to accelerate the recovery of bowel function mainly when compared to liberal fluid administration. These previously demonstrated benefits may have been offset by advances in perioperative and surgical care. *(Summary: M. J. Avram. Illustration: S. Jarret, C.M.I. Photo: J. P. Rathmell.)*



9 Risks of Cardiovascular Adverse Events and Death in Patients with Previous Stroke Undergoing Emergency Noncardiac, Nonintracranial Surgery: The Importance of Operative Timing

There is a steep decline and subsequent stabilization of risks of adverse perioperative outcomes within the first 9 months after stroke among patients undergoing elective surgery. This is thought to be due to deteriorating cerebral autoregulation within the first 5 days after stroke and impaired autoregulation for up to 3 months. The hypothesis that very early or more delayed surgery would be associated with better outcomes than surgery conducted at an intermediate time point when autoregulation may be maximally dysregulated was tested in a retrospective review of 146,694 emergency noncardiac, nonintracranial surgeries between 2005 and 2011, including 7,861 patients who had a previous stroke. There was a time-dependent increased risk of 30-day major adverse cardiovascular events and all-cause mortality associated with previous stroke. Elderly patients with comorbidities in addition to stroke were at especially high risk of perioperative major adverse cardiovascular events. *See the accompanying Editorial View on* **page 3**. *(Summary: M. J. Avram. Image: Thabele M. Leslie-Mazwi, M.D., Massachusetts General Hospital.)*

50 Epidural Neostigmine *versus* Fentanyl to Decrease Bupivacaine Use in Patient-controlled Epidural Analgesia during Labor: A Randomized, Double-blind, Controlled Study

Epidural neostigmine has been shown to reduce the epidural local anesthetic requirement for labor analgesia to a degree similar to that of opioids in small, single-dose studies. The hypothesis that epidural bupivacaine with neostigmine will provide more clinical effect by decreasing total hourly local anesthetic consumption compared to epidural bupivacaine with fentanyl was tested in 151 parturients randomized to receive 15 ml of 1.25 mg/ml bupivacaine mixed with 2 μg/ml fentanyl or 2, 4, or 8 μg/ml neostigmine. Hourly patient-controlled epidural analgesia bupivacaine requirements for labor in parturients administered study solutions of epidural bupivacaine with 2 to 8 μg/ml neostigmine were similar to those of patients receiving solutions of epidural bupivacaine with 2 μg/ml fentanyl. Neostigmine for epidural use is classified as an investigational drug by the U.S. Food and Drug Administration. *(Summary: M. J. Avram. Image: J. P. Rathmell.)*

136 Pain Catastrophizing Moderates Relationships between Pain Intensity and Opioid Prescription: Nonlinear Sex Differences Revealed Using a Learning Health System

Pain catastrophizing is a cascade of negative thoughts and emotions in response to actual or anticipated pain. It may explain up to 20% of the variance in chronic pain intensity and may, as a result, influence pain treatment. The relationship between existing opioid prescription, pain intensity, and pain catastrophizing was characterized in a retrospective observational study of 1,794 patients with chronic pain presenting for initial evaluation at a multidisciplinary pain treatment center. Using an advanced analytical approach, a significant relationship between pain intensity and opioid prescription was found that was much stronger in females, especially those with high levels of pain catastrophizing. Although males and females had similar levels of catastrophizing and opioid prescription, opioid prescriptions were more common at lower levels of catastrophizing for females. *(Summary: M. J. Avram. Photo: J. P. Rathmell.)*

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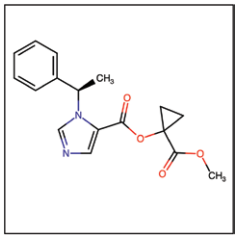
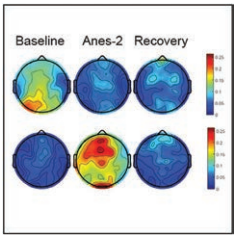


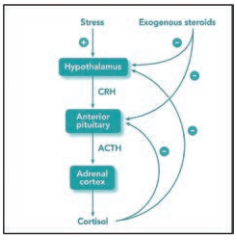
20 A Phase 1, Single-center, Double-blind, Placebo-controlled Study in Healthy Subjects to Assess the Safety, Tolerability, Clinical Effects, and Pharmacokinetics–Pharmacodynamics of Intravenous Cyclopropyl-methoxycarbonylmetomidate (ABP-700) after a Single Ascending Bolus Dose

The clinical use of etomidate is limited by variability in recovery times and inhibition of adrenocortical steroid synthesis. Cyclopropyl-methoxycarbonylmetomidate (ABP-700) is an etomidate analog that undergoes rapid hydrolysis by nonspecific tissue esterases and did not produce prolonged inhibition of steroid synthesis in animals. The safety and efficacy of ABP-700 were assessed and its maximum tolerated dose was determined in a placebo-controlled single ascending dose first-in-human study conducted in 60 volunteers divided into 10 cohorts. ABP-700 was safe up to a maximum tolerated bolus dose of 1.0 mg/kg. Onset of hypnosis after bolus administration was rapid as was recovery. ABP-700 did not cause cardiovascular depression, centrally induced respiratory depression, or suppression of the physiologic response of the adrenal axis to adrenocorticotropic hormone stimulation. Involuntary muscle movements were observed at doses of 0.175 mg/kg and above. *(Summary: M. J. Avram. Image: Chemical structure of cyclopropyl-methoxycarbonylmetomidate (ABP-700), available at:* https://chem.nlm.nih.gov/chemidplus/rn/1446482-29-6 *[public domain].)*



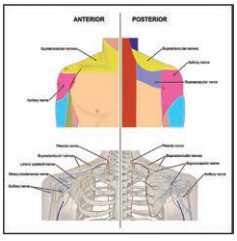
58 Neurophysiologic Correlates of Ketamine Sedation and Anesthesia: A High-density Electroencephalography Study in Healthy Volunteers

Electroencephalographic characteristics of ketamine anesthesia are distinct from those associated with anesthetics that act primarily *via* the γ-aminobutyric acid receptor. Spectral and connectivity analyses of high-density electroencephalographic recordings were used to characterize neurophysiologic changes associated with ketamine as a single agent during subanesthetic administration, anesthetic dosing, and a recovery period in 10 healthy volunteers. During subanesthetic ketamine administration, spectral power gradually shifted from the alpha bandwidth to the theta bandwidth, with maintenance of anterior-to-posterior connectivity (as measured by alpha-directed phase lag index). During ketamine anesthesia, however, there was a marked increase in theta power, theta-weighted phase lag index increased in anterior and posterior regions, and anterior-to-posterior alpha connectivity (as measured by theta-directed phase lag index) was significantly reduced. These connectivity patterns returned to near baseline levels in each bandwidth upon recovery. *(Summary: M. J. Avram. Illustration: Original to article.)*



166 Perioperative Steroid Management: Approaches Based on Current Evidence (Clinical Concepts and Commentary)

Chronic steroid therapy is a cornerstone treatment for many common conditions. When a patient on chronic steroid therapy presents for surgery, the anesthesiologist must decide whether to administer perioperative stress dose steroids to mitigate secondary adrenal insufficiency, a rare but potentially fatal complication of chronic steroid use. This Clinical Concepts and Commentary begins with a review of the physiology of the hypothalamic–pituitary–adrenal axis and its suppression in patients on chronic steroid therapy. It then reviews the historical basis for administering perioperative stress dose steroids as well as the current evidence for doing so. In the absence of class A and B evidence for determining an agreed-upon standard of care, the authors conclude by describing their practical approach to perioperative management of patients on chronic steroid therapy that involves categorizing them into one of four groups based on available evidence. *(Summary: M. J. Avram. Illustration: Original to article.)*



173 Phrenic Nerve Palsy and Regional Anesthesia for Shoulder Surgery: Anatomical, Physiologic, and Clinical Considerations (Review Article)

Regional anesthesia to provide perioperative analgesia for shoulder surgery has been achieved by performing an interscalene block, which targets the C5 and C6 roots of the brachial plexus in the interscalene region. Conventional interscalene block is associated with complications, the most common of which is phrenic nerve palsy with ensuing hemidiaphragmatic paresis. Transient phrenic nerve palsy after regional anesthesia for shoulder surgery results from a direct inhibitory effect of local anesthetic on the phrenic nerve or its roots, hence minimizing its occurrence depends on reducing the dose of local anesthetic reaching these neural structures. This can be achieved by modifying the local anesthetic dose, the interscalene block injection site and technique, or the location of local anesthetic injection and using a different regional anesthetic technique altogether. Strategies for reducing phrenic nerve palsy while ensuring adequate analgesia are reviewed. *(Summary: M. J. Avram. Illustration: Original to article.)*

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