ANESTHESIOLOGY

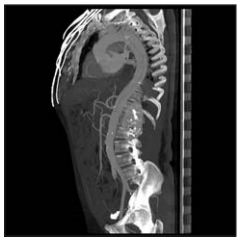
Jean Mantz, M.D., Ph.D., Editor

RBM3 mediates structural plasticity and protective effects of cooling in neurodegeneration. Nature 2015; 518:236–9.

Although much is known about toxic processes leading to synaptic dysfunction and loss in neurodegenerative disorders, how synaptic regeneration is affected is unknown. Cooling induces loss of synaptic contacts in hibernating mammals that reform upon warming, a form of structural plasticity. This study shows that synapse regeneration is impaired in mouse models of neurodegenerative disease in association with the failure to induce RBM3, a cold-shock protein. The data suggest a benefit to enhancing cold-shock pathways as potential protective therapies in neurodegenerative disorders and might provide an insight into some brain-protective mechanisms through deep hypothermia. Relevance to surgical procedures such as aortic arch repair under hypothermic cardiac arrest or resuscitation after cardiac arrest remains to be examined. *(Summary: J. Mantz. Illustration: J.P. Rathmell.)*

Anesthetic neurotoxicity—clinical implications of animal models. N Engl J Med 2015; 372:796–7.

A large body of experimental evidence supports toxicity of anesthetics on the newborn brain. However, there is still debate as to whether the experimental data are applicable to clinical pediatric anesthesia. In this section of the *New England Journal of Medicine,* Rappaport and coworkers discuss this unresolved issue. They conclude that the mounting evidence showing that anesthetic agents cause neurotoxic effects in the developing brains of laboratory animals increases the urgency of need for large-scale clinical studies to answer this and related questions. *(Summary: J. Mantz. Image: J.P. Rathmell.)*



Management of acute aortic dissection. Lancet 2015; 385:800–11.

This review offers anesthesiologists an opportunity to update their knowledge on the management of acute aortic dissection. Emphasis is on the recent developments—diagnostic strategies, including biomarkers and imaging, endograft design, and surgical treatment—which have led to a better understanding of the epidemiology, risk factors, and molecular nature of aortic dissection. Although open surgery remains the main treatment for proximal aortic repair, the use of endovascular management is now supported for complicated distal dissection and distal arch repair. Recent discussions have also considered endovascular repair as a preemptive measure to avoid late complications by inducing aortic remodeling. *(Summary: J. Mantz. Image: J.P. Rathmell.)*

Effect of sedative premedication on patient experience after general anesthesia: A randomized clinical trial. JAMA 2015; 313:916–25.

Sedative premedication is widely administered before surgery, but little clinical evidence supports its use. This French multicenter randomized trial assessed the efficacy of sedative premedication on the perioperative inpatient experience. One thousand sixty-two adult patients scheduled for elective noncardiac, nonobstetrical, nonneurosurgical procedures were randomly allocated to receive either lorazepam (2.5 mg), no premedication, or placebo 2 h before surgery. The primary outcome criterion was patient experience assessed 24 h after surgery. It was found that sedative premedication with lorazepam compared with placebo or no premedication did not improve the self-reported patient experience the day after surgery, but was associated with modestly prolonged time to extubation and a lower rate of early cognitive recovery. These findings challenge the routine use of lorazepam as a sedative premedication in patients undergoing general anesthesia. *(Summary: J. Mantz. Image: J.P. Rathmell.)*

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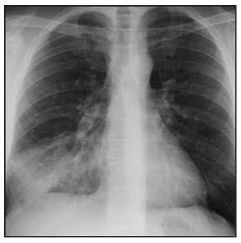
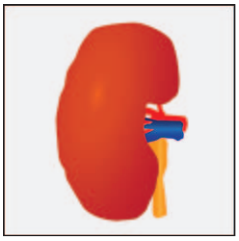


Effect of corticosteroids on treatment failure among hospitalized patients with severe community-acquired pneumonia and high inflammatory response: A randomized clinical trial. JAMA 2015; 313:677–86.

In patients with severe community-acquired pneumonia, treatment failure is associated with excessive inflammatory response and poor outcomes. Corticosteroids may modulate cytokine release in these patients, but the benefit of this adjunctive therapy remains controversial. In this multicenter, double-blind, placebo-controlled trial, patients with both severe community-acquired pneumonia and a high inflammatory response were randomized to receive either an intravenous bolus of 0.5 mg/kg per 12 h of methylprednisolone (n = 61) or placebo (n = 59) for 5 days to begin within 36 h of hospital admission. Corticosteroid treatment reduced the risk of treatment failure (odds ratio, 0.34 [95% CI, 0.14 to 0.87]; $P = 0.02$) without affecting mortality. These findings suggest a benefit to corticosteroid therapy in this patient population. *(Summary: J. Mantz. Image: J.P. Rathmell.)*



The association of acute kidney injury in the critically ill and postdischarge outcomes: A cohort study. Crit Care Med 2015; 43:354–64.

Little is known about risk factors associated with hospital readmission in survivors of critical illness, but acute kidney injury may account for hospital readmission in these patients. In this two-center cohort study including 62,096 intensive care unit survivors, it was shown that acute kidney injury was a robust predictor of hospital readmission within 30 days of admission (primary outcome) and postdischarge mortality (secondary outcome). Patients who suffer acute kidney injury make up a high-risk group of intensive care unit survivors who may experience adverse outcomes following discharge. *(Summary: J. Mantz. Illustration: J.P. Rathmell.)*

Heritability of pain catastrophizing and associations with experimental pain outcomes: A twin study. Pain 2015; 156:514–20. *See also* Heritability of catastrophizing: The biopsychosocial model in action. Pain 2015; 156:357–8.

A great deal of excitement surrounds the application of genetic studies to understanding acute and chronic pain. Studies have examined the contribution of individual genes to pain measures based on the role that those genes play in pain biology. Trost *et al.* demonstrate that genetics contribute critically to psychological factors affecting the pain experience, in their recent report. Using 400 pairs of twins, these authors found that 37% of the variance in pain catastrophizing was attributable to genetic factors. Catastrophizing is strongly associated with pain sensitivity, pain after surgery, chronic pain, and long-term disability. Furthermore, the genetic factors affecting catastrophizing appeared to be different from those affecting pain sensitivity. These findings broaden our horizons for genetic testing and the physiological response to pain and related genetic connections. *(Summary: J.D. Clark. Image: J.P. Rathmell.)*

Differences between attendings' and fellows' perceptions of futile treatment in the intensive care unit at one academic health center: Implications for training. Acad Med 2015; 90:324–30.

Identifying patients who will not benefit from continued critical care (futile care) improves the healthcare experience for patients and their families while reducing healthcare costs. This study quantified the time used by attending physicians and the accuracy with which they determined futility of care and compared those variables to critical care medicine (CCM) fellows. CCM attendings determined that 10.9% of the patients were receiving futile care compared with 20.8% for the fellows ($P < 0.001$). Attendings demonstrated more complexity in making this decision and were more accurate in their predictions of futility. This study has implications for fellow education in CCM and anesthesiologists practicing CCM. There is a time frame for developing this complex prognostic skill and some trainees may require more time and targeted discussions on rounds to develop these abilities. *(Summary: F.P. Cladis. Image: J.P. Rathmell.)*

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