◇ This Month in

ANESTHESIOLOGY

■ Is Exercise Electrocardiography Useful for Risk Stratification before Noncardiac Surgery? Gauss *et al.* (page 38)

During a 2-yr period, Gauss *et al.* examined 204 patients who had coronary artery disease or were at risk for it before their scheduled noncardiac surgeries. Patients underwent exercise stress testing on a supine bicycle ergometer 1 day before surgery. A 12-lead electrocardiogram was recorded at rest, once per minute during exercise and during recovery until the electrocardiogram reverted to preexercise morphology. The exercise electrocardiogram was classified as abnormal if new horizontal or down-sloping ST-segment depressions of more than 0.1 mV were seen in three consecutive beats without baseline variation. Rest and exercise electrocardiograms were evaluated by two independent investigators blinded to patient identity and clinical outcome. A third investigator was consulted if the first two interpretations differed.

Echocardiography was performed on each patient before surgery. Patients were monitored with a two-channel Holter electrocardiographic recorder from the evening before surgery until the morning of the second postoperative day. Twelve-lead electrocardiograms and creatine kinase, creatinine kinase MB, and troponin-T measurements were assessed until the sixth postoperative day. One of the study authors also performed a history and physical examination of each patient until the fifth postoperative day and on the day of discharge from the hospital. Telephone interviews with patients were conducted 30 days after surgery to obtain cardiac histories.

Perioperative cardiac events (6 myocardial infarctions, 10 cases of minor myocardial cell injury) were observed in 16 of the 185 patients available for final examination. Despite the small sample size and the fact that physicians treating the patients were not blinded to preoperative resting and exercise electrocardiographic findings, the study showed that an ST-segment depression of 0.1 mV or more was an independent predictor of perioperative cardiac complications. An abnormal resting electrocardiogram was not an independent predictor of such complications. A combination of a clinical parameters, such as definite coronary artery disease and the type of surgery, with the results of the electrocardiographic exercise stress test, allowed sufficient risk stratification.

■ Platelet Function, Coagulation, and Fibrinolysis Assessed during and after Infrarenal Aortic Surgery. Samama *et al.* (page 74)

In 17 patients undergoing infrarenal abdominal aortic replacement, Samama *et al.* collected blood samples before, during, and after surgery to assess platelet function, coagulation, and fibrinolytic status. All patients were given a bolus of 50 IU/kg unfractionated heparin intravenously immediately before aortic cross-clamping. In addition, daily subcutaneous injections of 3,075 Anti-Xa IU of low-molecular-weight heparin were given during the postoperative period as prophylaxis against deep vein thrombosis.

Measured blood loss, fluid loading, and transfusion requirements during surgery were recorded. Blood samples were taken before induction of anesthesia, 1 h after incision, 1 h after extubation in the recovery room, 24 and 48 h postoperatively, and at postoperative day 7. Aggregometry and flow cytometry studies, prothrombin time, activated partial thromboplastin time, thrombin time, fibrinogen, thrombin–antithrombin complexes, plasminogen activator inhibitor 1, platelet count, and hematocrit determination analyses were performed after surgery. A significant increase in adenosine diphosphate–induced platelet aggregation was observed in blood samples collected 24 and 48 h postoperatively but was not associated with a change in flow cytometry profile. A higher fibrinogen rate was detected on days 2 and 7 after surgery. Platelet counts increased significantly later—in samples collected on day 7 after surgery. No increase in thrombin–antithrombin was recorded at any time. Significant but temporary inhibition of fibrinolysis was observed 1 h after extubation and 24 h postoperatively. The activation of platelets evidenced during the early postoperative period, associated with an increased fibrinogen rate and temporary shut down of fibrinolysis, indicates increased thrombotic risk for patients undergoing major vascular surgery. Therefore, evaluation of benefit/risk ratios of antiplatelet and anticoagulant agents in this setting may be warranted.

■ Is the "Sniffing Position" Essential for Orotracheal Intubation? Adnet *et al.* (page 83)

Eight healthy volunteers were recruited for a study by Adnet *et al.* designed to test the conventional wisdom of the superiority of the so-called sniffing position for successful orotracheal intubation. The rationale given for using this position (neck in flexion, face extended, pillow under neck) is that the oral, pharyngeal, and laryngeal axes align. Accordingly, the researchers performed magnetic resonance imaging with the volunteers' heads in neutral position, in simple extension, and in the sniffing position. All scans were interpreted by a radiologist who was blinded to the aims of the study. On each scan, the following measurements were performed: the axis of the mouth (defined as a straight line drawn parallel to the hard palate), the pharyngeal axis (a line passing through the anterior portion of the atlas and C2), the laryngeal axis (a straight line passing through the centers of the inferior and superior orifices), and the line of vision (a straight line passing through the inferior extremity of the superior incisors and posterior extremity of the superior portion of the cricoid cartilage).

What the researchers found is that anatomic alignment of the laryngeal, pharyngeal, and mouth axes is impossible to achieve in any of the three positions tested. Although the study was limited by inability to examine volunteers with a laryngoscope blade in place, the results do not support the widely held assumption that the sniffing position improves anatomic alignment of the three important axes in laryngoscopy. Definite answers to the question of whether simple head extension or the sniffing position provides the best alignment might be provided by a prospective, randomized trial of the two methods.

■ Effects of Oleamide on Tetrodotoxin-sensitive Sodium Channels Investigated. Nicholson *et al.* (page 120)

Originally detected in the cerebral spinal fluid of sleep-deprived cats, oleamide (*cis*-9,10-octadecenoamide; cOA) has been found to induce sleep when injected into rats, but its cellular actions are not well-understood. Using standard binding and electrophysiologic protocols, Nicholson *et al.* sought to characterize the effects of the sleep-inducing lipid on voltage-gated sodium channels in mouse brain and neuroblastoma cells. Murine neuroblastoma cells were incubated at 37°C in 5% CO_2 for some of the experiments, 2% dimethyl sulfoxide was added to the growth medium, increasing Na^+ current density in the clamped somata without altering oleamide sensitivity. Cells were selected for electrophysiologic experiments 24–36 h after plating. cOA stereoselectively inhibited specific binding of batrachotoxin (scorpion venom) to voltage-gated sodium channels. cOA blocked tetrodotoxin-sensitive sodium currents (maximal effect and affinity were significantly greater at depolarized potentials). Between 3.2 and 64 μM, the block was concentration dependent and saturable, but cOA did not alter the voltage at which one half maximal conductance occurred for activation curves or measured reversal potential.

The experiments showed that oleamide has the capacity to exert concurrently inhibitory effects on presynaptic Na^+ channels and postsynaptic γ-aminobutyric acid type A receptors. The results suggest that this hypnogenic isomer has a similar molecular mode of action to other drugs that are widely used for the treatment of anxiety, sleep disorders, and epilepsy. cOA may represent an endogenous ligand for depressant drug sites in the mammalian brain.

Gretchen Henkel