GERIATRICS

Clots, Shocks and Nausea: Perioperative Challenges of the Elderly

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Elderly surgical patients present a range of perioperative challenges. In addition to choice of anesthesia, the general frailty of many elderly individuals is a major consideration, along with questions about how to handle anticoagulant therapy, internal cardiac defibrillators and nausea and vomiting. Anticipating common perioperative scenarios can prevent them from turning into problems.

Mind the "Dwindles"

Geriatric failure to thrive—sometimes called the "dwindles"—can complicate a normally straightforward surgery. Common manifestations of the syndrome include malnutrition, impaired physical functioning, depression and cognitive decline. These conditions typically lead to a downward spiral involving significant weight loss, muscle wasting, fatigue, general weakness, compromised immune function, social withdrawal and isolation.

According to Steven I. Gayer, MD, director of anesthesia at Bascom Palmer Eye Institute in Miami, these very frail patients can present more of a challenge during a minimally intrusive procedure than one might encounter with a healthy individual during a major operation.

"Elderly people who are getting by but have been losing weight and have poor endurance, limited exercise capacity and declining levels of physical activity are at the greatest perioperative risk during even the most minor of surgeries," Dr. Gayer said. "They have much less physiological reserve, and with a little bit of stress they can decompensate. So it's really important to know what you have in front of you and what type of patient you are dealing with. Does the patient have any decompensated heart failure, significant arrhythmias, valvulopathy or breathing problems? Does the patient's arthritis compromise his or her ability to remain supine during surgery?"

Dr. Gayer, who is also an associate professor of anesthesiology and ophthalmology at the University of Miami, noted that surgeons are often more comfortable with having an anesthesiologist involved in the perioperative care of their most frail patients.

What About Anticoagulants?

Concern over the risk of bleeding has led some ophthalmologists to ask patients to stop their anticoagulants before needle-based procedures like an anti-VEGF injection. But Dr. Gayer believes that the risk of a consequential bleed (as opposed to a cosmetic bleed) in these circumstances is very low. "When you compare the likelihood of a consequential bleed to what could happen if you discontinue anticoagulant therapy —a heart attack or stroke—it's probably the better part of valor to leave them on their medication."

Most people taking anticoagulants are underanticoagulated, he added, but if a patient is showing signs of overanticoagulation, such as ecchymoses or petechiae, coagulation tests or delay of elective surgery may be in order.

Plan Ahead

It's important to anticipate problems with surgery in older patients.

"Otherwise, I doubt that there is much benefit to stopping anticoagulants for an anti-VEGF injection or even for a needle-based block," Dr. Gayer said. "With oculoplastic surgery, of course, anticoagulation may not be appropriate. But with cataract surgery you may have the option of deciding to just leave things as they are."

Anticoagulants and drug-eluting stents. Stopping anticoagulants in a patient who recently received a drug-eluting stent can have catastrophic consequences.

Paradoxically, these drug-coated stents, which are designed to prevent the re-stenosis associated with bare-metal

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stents, promote clot formation in the first year after placement. Dual antiplatelet therapy with aspirin and clopidogrel (Plavix) or ticlopidine (Ticlid) during this vulnerable time significantly reduces this risk. Stopping the antiplatelet therapy prematurely can lead to stent thrombosis, which may result in heart attack and/or death.

Results of a large observational cohort study[1] revealed that 29 percent of patients whose antiplatelet therapy was prematurely discontinued experienced stent thrombosis. In another study of 500 patients who had experienced an acute myocardial infarction and were being treated with a drug-eluting stent, the mortality rate at 11 months was 7.5 percent for those who had discontinued antiplatelet therapy, compared with 0.7 percent for those who were maintained on anticoagulants.[2]

In light of these and similar findings, the American Heart Association, along with several other national medical organizations, published an advisory that warns against discontinuing anticoagulation in the first year after placement of a drug-eluting stent.[3] The advisory states that elective procedures that pose a significant risk of bleeding should be deferred until the patient finishes the recommended 12 months of antiplatelet therapy.

If an invasive or surgical procedure is medically necessary, the surgeon or anesthesiologist should contact the patient's cardiologist to discuss the anticoagulant therapy and the optimal management strategy. The advisory also states that if clopidogrel or ticlopidine must be withdrawn for surgery, aspirin should be continued if at all possible and the other anticoagulant restarted as soon as possible after the procedure.

Implantable Cardiac Defibrillators: On or Off?

The use of implantable cardiac defibrillators (ICDs) to prevent sudden cardiac death has skyrocketed in recent years, with an estimated 200,000 in use in the United States alone. With the increasing prevalence of ICDs, the likelihood of an ophthalmic surgeon encountering a patient with one of these implanted devices is also on the rise.

Deciding whether to leave an ICD active during ocular surgery can be a tough call. An activated ICD poses the risk of patient movement and a potential surgical mishap if the device fires during the procedure. Disabling an ICD during surgery necessitates additional measures to monitor the ECG, to reliably inactivate and reactivate the device and to ensure that a working external defibrillator is immediately available. Although the odds of either course of action causing serious problems are exceedingly small, the potential risks associated with each are serious enough to merit discussion.

What you need to know. Joseph Bayes, MD, director of preoperative evaluation in the department of anesthesia at the Massachusetts Eye and Ear Infirmary, said it's important to know that the device is working properly before elective surgery and to obtain some device-specific information to help manage the patient during surgery. This information should be obtained from the clinic that interrogates the device and ideally should include:

- Device manufacturer and model
- Date of implantation
- Name and telephone number of the patient's ICD clinic
- Date of the most recent in-office or in-hospital interrogation of the ICD (The device should have been checked within the past three months.)
- Documentation of proper device functioning, adequate battery life, date and type of any electrical therapy delivered, dates of any ventricular or supraventricular abnormalities and notation of special precautions, such as lead malfunctions
- How the device will respond to a magnet placed over it
- Recommendations on how to manage the device during the proposed surgery
- Name and telephone number of supervising physician

Keeping it on. Dr. Bayes said that most patients are at a low risk of having an ICD discharge during brief eye surgery—as low as 1 in 240,000 brief procedures, assuming that the patient has never had a cardiac arrest and that the device has never fired. "If the patient is at low risk, many surgeons leave these devices activated during eye operations. Bipolar electrosurgery does not seem to interfere with the proper functioning of active ICDs." (Unipolar electrosurgery is not commonly used for eye surgery, but if required, the ICD should be inactivated to prevent inappropriate device discharge.)

If indeed an ICD is left activated during an operation, the ECG must be vigilantly monitored. With most current ICD models, the time between the onset of a ventricular arrhythmia and delivery of the shock is between six and 12 seconds. As a result, the individual monitoring the ECG must warn the surgeon at the first sign of an arrhythmia to give the surgeon a few seconds to adjust instruments before a shock is delivered. (Patient movement commonly occurs with delivery of a shock.)

Turning it off. Patients are at higher risk of having their ICD deliver a shock during surgery if they have had a lead malfunction or a device discharge, ventricular tachycardia or supraventricular arrhythmias within the previous year. In these instances, consideration should be given to device inactivation immediately before surgery (after appropriate ECG monitoring and an external defibrillator have been made available) and having the surgery performed in a hospital with perioperative device management assistance from the hospital's electrophysiology clinic or a representative of the device manufacturer.

ICDs can be inactivated with a brand-specific interrogation device or possibly with a magnet placed over the device. According to Dr. Bayes, "Although most ICDs' shocking function can be inactivated with a magnet placed over the device and reactivated within seconds by removing the magnet, a magnet should never be placed over an ICD without first confirming with the patient's electrophysiology lab or device manufacturer how the device will respond to a magnet."

For example, he said, "Some models of Boston Scientific and St. Jude ICDs can be programmed to not be inactivat-

ed by a magnet. Of even greater concern, Boston Scientific models can be programmed to be permanently inactivated by a magnet. That's why it's critical to have device-specific information before considering inactivation of an ICD with a magnet."

Agents for Nausea and Vomiting

The arsenal of antinausea medications has grown considerably in recent years. Dr. Gayer noted that postoperative nausea and vomiting is a serious problem, particularly for patients undergoing strabismus surgery and some oculoplastic procedures. Other older adults at higher risk of developing retching and/or emesis are women, nonsmokers, people with a personal or family history of motion sickness and those who have experienced the problem after past surgeries. (Younger patients are also at higher risk.)

The newest antiemetic agents are 5HT3 inhibitors, such as ondansetron (Zofran) and granisetron (Kytril), and the neurokinin-1 antagonist aprepitant (Emend). Dr. Gayer noted that these agents are very effective and can be prescribed prophylactically for patients at risk of nausea and vomiting.

Ondansetron comes in a tablet that dissolves on the tongue. Aprepitant is a capsule that is given early on the day of surgery.

"Aprepitant is an interesting drug because if you have patients who say they are always throwing up after surgery, you can give them one of these pills to take in the morning, before they come in for the procedure, and it suppresses the nausea and retching response for the rest of the day," Dr. Gayer said. "But it's important to give it early on—it's not the kind of thing you can think of later for rescue."

Drs. Bayes and Gayer report no related financial interests.

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1 Iakovou, I. et al. *JAMA* 2005;293:2126–2130.

2 Spertus, J. A. et al. *Circulation* 2006;113:2803–2809.

3 Grines, C. L. et al. *Circulation* 2007;115:813–818.