

Presurgical Cardiac Screens Are Often Unneeded

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BALTIMORE — Preoperative screening to identify potential cardiac complications is often unnecessary and may not help a surgeon to reduce risk during an elective procedure, said Dr. Richard Lange at a cardiovascular conference sponsored by Johns Hopkins University, Baltimore.

There are many reasons to focus on patients who are at highest risk for complications. Nuclear stress testing alone costs about \$10 billion each year, said Dr. Lange, chief of clinical cardiology at Johns Hopkins. There are 27 million people who undergo noncardiac surgeries each year in the U.S., but only 8 million have coronary artery disease or risk factors, and 50,000 will have a perioperative MI, he said.

Patients undergoing low- or intermediate-risk procedures aren't likely to need stress testing, he said. Endoscopic, superficial, cataract, and breast procedures are considered low risk, with a less than 1%

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complication rate. Procedures with an intermediate risk (1%-5% complication rate) include carotid endarterectomy, as well as head and neck, intraperitoneal, intrathoracic, orthopedic, and prostate procedures.

The highest-risk procedures (more than 5% complication rate) include emergent major operations, especially in elderly patients, in the aorta or other major vessels, in peripheral vasculature, and in procedures with large fluid shifts or blood loss, said Dr. Lange.

Usually, older patients and those with rhythm disorders, abnormal ECGs, a low functional capacity, or uncontrolled hypertension are considered to be at risk for cardiac complications. But none of these is an independent risk factor, said Dr. Lange.

However, six predictors have been identified as independent risk factors: a high-risk surgical procedure; a history of ischemic heart disease; a history of heart failure; a history of transient ischemic attack or stroke; insulin therapy; and a preoperative serum creatinine level greater than 2 mg/dL (Circulation 1999;100:1043-9). According to this Revised Cardiac Risk Index, the focus for work-ups should be on patients who have more than three of these risk factors.

Not all tests provide valuable information, either. A 2003 metaanalysis of the predictive ability of noninvasive tests found varying sensitivity and specificity results (Heart 2003;89:1327-34). Perfusion imaging, for instance, had a high sensitivity, but very low specificity. Dobutamine stress echocardiography had an 85% sensitivity and 70% specificity. Tests should provide a high positive predictive value,

and—more importantly—should give the clinician information beyond what can be determined by the clinical risk factors, said Dr. Lange. And tests should lead to a strategy that reduces the risk of perioperative MI.

If a diagnostic test seems warranted and indicates increased risk, it's not always advisable to perform coronary revascularization, said Dr. Lange. Several studies have shown that patients who had a percutaneous coronary interven-

tion (PCI) or coronary bypass artery graft (CABG) to minimize risk actually ended up in worse condition. The Coronary Artery Revascularization Prophylaxis trial found that high-risk patients who received a PCI or CABG followed by vascular surgery did no better than those who were given medical therapy (N. Engl. J. Med. 2004;351:2795-804). And, said Dr. Lange, there was a 9% rate of death or myocardial infarction during the revascularization procedure.

Stenting before noncardiac surgery may put patients at even higher risk, he said, citing three trials showing increased major bleeding, cardiac events, and death if the follow-on procedure was done within a few weeks. Drug-eluting stents may put patients at higher risk because of delayed endothelialization and increased risk of subacute and late thrombosis. The evidence suggests that noncardiac surgery should be done a minimum of 3-6 months after drug-eluting stent placement, he said. ■

INTRODUCING

THE AGE OF AQUARESIS

THE ROLE OF ARGININE VASOPRESSIN IN SODIUM AND WATER IMBALANCE

DEFINING AVP

The neurohormone arginine vasopressin (AVP), also known as ADH, plays a key role in balancing sodium and water in the body.¹ Changes in the osmotic pressure of extracellular fluid trigger the release of AVP from the pituitary gland, which is where it is stored after being synthesized in the hypothalamus.^{1,2} Once released, AVP binds to V₂ receptors in the collecting ducts of the kidneys, resulting in increased free-water reabsorption.³ AVP is elevated in a number of disease states such as SIADH and CHF.⁴

The most common form of fluid and electrolyte imbalance is hyponatremia,⁵ a condition of abnormally low sodium levels in the plasma, usually defined as a concentration of <135 mEq/L.⁶ Hyponatremia may develop as a result of underlying disease states or with the use of certain medications.⁶ For these reasons, this serious condition remains largely underdiagnosed. In one study of hospitalized patients, only one third of the cases of hyponatremia were properly identified.⁷ In addition, another

study found that 18% of nursing home residents aged 60 years or older were hyponatremic.⁸

Left untreated, hyponatremia can result in neurological disturbances and increase the risk of morbidity and mortality in underlying disease states.^{2,6} It is important that

hyponatremia be identified quickly and accurately to achieve desired results from treatment.⁶ Even once identified, however, it can prove to be a therapeutic challenge.

Current therapies for hyponatremia are often characterized as inefficient and unpredictable. Primary approaches include fluid restriction, hypertonic saline solution, and loop diuretics.² Because a variety of medications may induce or worsen hyponatremia, it is often recommended that these medications be discontinued,⁶ leading to complications and potential clinical dilemmas.

Clearly, the underlying cause of hyponatremia—AVP imbalance—needs to be addressed.

THE NEUROHORMONE ARGININE VASOPRESSIN (AVP) PLAYS A KEY ROLE IN BALANCING SODIUM AND WATER IN THE BODY