There were also eight late deaths. One-year survival was 83% ± 7%. Among patients with infected endovascular devices, three experienced major late complications (persistent infection, pseudoaneurysm, and recurrent fistula), and two of these patients died.

Comment: This is a large series of complex procedures performed for failure of endovascular abdominal or thoracic aortic devices. Case series of open removal of endovascular devices seem to be appearing more frequently as more of these devices are implanted. It is notable that the devices in 71% of the patients in this series were implanted for off-label indications. Sixty percent of the patients had been treated for aortic dissection. It also should be noted that if the device is not infected, the patients can do well with open removal. However, as whole, patients with infected devices and those with devices placed for control of fistula have a poor prognosis.

Usefulness of Pre-Operative Copeptin Concentrations to Predict Post-Operative Outcome After Major Vascular Surgery

Jarai R, Mahla E, Perkmann T, et al. Am J Cardiol 2011;108:1188-95.

Conclusion: Copeptin is a new biomarker that potentially improves prediction of perioperative and postoperative outcomes in vascular surgery patients.

Summary: The revised cardiac risk index, the so-called Lee index, is used widely to determine preoperative risk of surgical patients (Lee TH et al, Circulation 1999;100:1043-49). Arginine vasopressin (AVP), an antidiuretic hormone, is important in the regulation of cardiovascular homeostasis. It also affects platelet aggregation and release of von Willebrand factor (Katan M et al, Crit Care 2008;12:117). Many factors play a role in perioperative myocardial infarction, including hypertension, platelet aggregation, fibrinolytic activity, and hypercoagulability. Some of these are influenced by AVP. The authors postulate enhanced AVP secretion before surgery could potentially make patients susceptible to perioperative myocardial events; however, for a variety of reasons, AVP itself is unsuitable as a biomarker for routine clinical practice. The C-terminal fragment of the provasopressin peptide, copeptin, is secreted in equimolar amounts with AVP. Copeptin can be reliably determined with a chemiluminescence assay (Morgenthaler NG et al, Clin Chem 2006;52:112-9). The purpose of this report was to determine whether copeptin levels the day before elective vascular surgery identified high-risk patients. There were 189 consecutive patients who underwent major vascular surgery. Infrainguinal reconstructions accounted for 58.6%, abdominal aortic aneurysm surgery for 23.7%, and carotid endarterectomy for 17.7%. In-hospital and 2-year major cardiac adverse event rates (cardiac death, nonfatal myocardial infarction, emergency coronary revascularization) were monitored. Forty patients (20.2%) reached the primary end point. Most events occurred during the index hospital stay, 45%. By univariate analysis, increasing concentrations of copeptin as a continuous variable were significant determinants of outcome (hazard ratio [HR], 1.012; $P = .005$) and as a dichotomized variable using the recommended cutoff of 14.0 pmol/L (HR, 4.116; $P < .001$). Patients at low estimated risk according to N-terminal pro-B-type natriuretic peptide (NT-pro-BNP) levels were at a significantly higher risk for worse outcomes with higher copeptin levels (HR, 5.983; $P = .002$). Multivariate Cox regression analysis demonstrated copeptin concentrations >14 pmol/L were independent predictors of outcome (HR, 2.842; $P = .002$). This was in addition to type of surgery, history of myocardial infarction, and elevations of cardiac troponin T and NT-pro-BNP levels. Higher copeptin levels were additive to the Lee index (>14 pmol/L; HR, 4.059; 95% confidence interval, 2.18-7.57; $P < .001$) and to the Eagle score (HR, 3.26; 95% confidence interval, 1.72-6.17; $P < .001$) for estimating postoperative outcomes.

Comment: There is the possibility, because of the small number of patients in this study, the authors actually underestimated the association of copeptin concentrations with cardiac events after major vascular surgery. It follows they may also underestimate the additional predictive value of copeptin concentrations to more established risk factor assessment, such as the Lee index, NT-pro-BNP, and Eagle criteria. In addition, patients entered this study between 2002 and 2003, and techniques of anesthesia and vascular surgery have changed significantly since then. The authors' results, therefore, while interesting, need confirmation in a larger more contemporary population of vascular surgical patients.