Oral Glucose Test Is Best Before Vascular Surgery

BY MITCHEL L. ZOLER
Philadelphia Bureau

VIENNA — An oral glucose tolerance test identifed impaired glucose hemostasis in patients awaiting elective noncardiac vascular surgery more effectively than did a fasting plasma glucose test.

It's important to screen these patients for diabetes and impaired glucose tolerance because these are common complications in patients awaiting vascular surgery. The prevalence of diabetes was 11% in a group of 404 patients from one medical center, Dr. Martin Dunkelgrun and associates reported in a poster at the annual congress of the European Society of Cardiology. About three-quarters of the affected patients would have been missed if oral glucose tolerance tests (OGTT) had not been done, Dr. Dunkelgrun said in an interview.

"An OGTT should be routinely done for all patients scheduled for elective, noncardiac, vascular surgery," said Dr. Dunkelgrun, a researcher at Erasmus University, Rotterdam, the Netherlands.

The prospective study included 404 patients with no history of diabetes or impaired glucose hemostasis who were scheduled for elective, noncardiac vascular surgery at Erasmus during November 2004–May 2007. Their average age was 68 years, and 74% were men.

The OGTT results identified 104 patients (26%) with impaired glucose hemostasis based on a plasma glucose of at least 7.8 mmol/L after the glucose challenge; 43 patients (11%) were diagnosed with diabetes, based on a serum glucose level of at least 11.1 mmol/L after glucose challenge. This shows the high prevalence rate for diabetes in vascular surgery patients, Dr. Dunkelgrun said.

Only 26 of the 104 patients with impaired glucose hemostasis (25%) and 12 of the 43 with diabetes (28%) would have been correctly diagnosed based on their fasting glucose level. Many physicians measure only the fasting plasma glucose level because an OGTT takes more time and costs more, he said.

The study also tallied the number of patients with ECG signs of coronary ischemia. Higher rates of ischemia and cardiovascular death were found in patients with diabetes or impaired glucose hemostasis. In a multivariate analysis that controlled for age, gender, renal failure, hypertension, hypercholesterolemia, and other clinical conditions, patients with diabetes had a more than threefold increased risk of having cardiac ischemia after surgery than did patients without diabetes, a significant difference. Patients with diabetes also had a 2.5-fold increased risk of cardiovascular death during the first 30 days following their surgery, but this difference was not significant.

Patients with diabetes require more careful monitoring and tighter glucose control while hospitalized for vascular surgery to reduce their cardiac risk, the investigators concluded. ■

Elevated NT-ProBNP Predicts Death After Cardiac Surgery

BY DOUG BRUNK
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SAN DIEGO — Preoperative elevated levels of *N*-terminal pro-B-type natriuretic peptide are an excellent predictor of mortality in patients undergoing cardiac surgery, even when adjusted for currently used scoring systems, Dr. Brian H. Cuthbertson reported during a poster session at the annual meeting of the American Association for Clinical Chemistry.

Dr. Cuthbertson and his associates measured the preoperative NT-proBNP levels from blood samples in 541 consecutive patients who underwent cardiac surgery at Aberdeen Royal Infirmary, Aberdeen, Scotland. They followed the patients postoperatively for a median of 18 months to assess mortality.

The researchers found that the median NT-proBNP levels were significantly higher in the patients who died, compared with those who survived (1,173 pg/mL and 282 pg/mL, respectively).

In addition, patients who died were significantly older than those who survived (median 73 years and 67 years, respectively). They also had significantly higher scores on the European System for Cardiac Operative Risk Evaluation (EuroSCORE) than did survivors (median 6.6 and 2.9, respectively).

Median estimated glomerular filtration (eGFR) rate was significantly lower in patients who died, compared with survivors (62 mL/min per 1.73 m^2 vs. 74 mL/min per 1.73 m^2).

In a Kaplan Meier analysis for survival, patients in the highest tertile for NT-proBNP showed the highest mortality, compared with those in the lower two tertiles (12.8% vs. 2.2%).

A multivariate model that included NT-ProBNP, EuroSCORE, age, gender, previous myocardial infarction, hypertension, diabetes, smoking, and eGFR showed that only elevated levels of NT-ProBNP and older age remained significant predictors of mortality.

"Preoperative measurement of NT-proBNP may help identify patients at higher risk who would benefit from further optimization of clinical status prior to surgery," the researchers concluded.

The study, which is the largest of its kind, will eventually enroll 1,000 patients, according to Dr. Cuthbertson. ■

TEG Cuts Bleeding, Use of Blood Products in Infants

BY MITCHEL L. ZOLER
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WASHINGTON — Monitoring hemostasis with thromboelastography was associated with reduced bleeding and blood product use in infants undergoing open-heart surgery in a nonrandomized comparison of 182 patients at one center.

"TEG [thromboelastography]-guided treatment is specific to a patient's hemostasis profile and allows correction of coagulopathy before the patient leaves the operative room," Dr. Eric Mendeloff said at the annual meeting of the American Association of Thoracic Surgery.

TEG provides a global assessment of hemostasis. Rather than measure the serum level of various clotting factors, it measures parameters such as the rate of clot formation and clot strength. The TEG device is Food and Drug Administration approved, and is marketed by Haemoscope. Dr. Mendeloff's study received no commercial funding, and he disclosed no financial relationships.

The study assessed blood product use in infants less than 6 months old who underwent cardiopulmonary bypass for open-heart surgery at Medical City during two eras of TEG use. The study included 70 babies who had surgery during November 2003–January 2005, when the TEG monitor was not available. A second set of 112 infants underwent surgery during April 2005–January 2007, when TEG monitoring was used routinely at the hospital.

The average age of the children in each group was 3 months, and the two groups did not differ by weight, bypass time, or degree of hypothermia. The two groups also had similar lab values before surgery and a similar level of aspirin use.

Because cyanotic infants bleed more than acyanotic babies, the analysis also examined the impact of TEG among infants in each of these subgroups. In the pre-TEG era, 19% of the infants were cyanotic; in the TEG era, 41% were cyanotic.

Among all patients, those treated using TEG had significantly less total blood product use postoperatively, compared with patients treated before TEG. The blood products measured were fresh-frozen plasma, cryoprecipitate, platelets, and packed red cells. TEG use led to significant increases in the volume of fresh frozen plasma used both intraoperatively and postoperatively, but this effect was more than counterbalanced by increased use of cryoprecipitate and platelets during the pre-TEG era. Use of TEG was also linked with a significant reduction in the volume of fluid removed by the chest tube, measured at 1, 2, and 24 hours following surgery.

In the acyanotic patients, TEG use was also linked with a significant reduction in the total volume of blood products infused, and with a reduction in the volume of fluid removed by the chest tube postoperatively. In contrast, in cyanotic patients, TEG use was linked with an increased volume of blood products, which was caused by a substantially increased need for fresh-frozen plasma in the TEG group. Despite the increased use of fresh-frozen plasma, chest tube volume was less with TEG monitoring at all time points measured.

"TEG was equally effective for correcting hemostasis in the cyanotic and acyanotic patients," said Dr. Mendeloff, who is surgical director of the congenital heart disease program at Medical City Hospital in Dallas. ■

Metabolic Syndrome Nearly Tripled Post-CABG Risk of Mortality

Patients with metabolic syndrome are nearly three times as likely to die following coronary artery bypass graft surgery as are patients without the syndrome, according to a large study.

Patients with both metabolic syndrome and diabetes had a 2.7-fold increase in the risk of mortality, and patients with metabolic syndrome but without diabetes had a 2.4-fold increase in risk. In the multivariate analysis, there proved to be no significant increase in the risk of mortality in patients who had diabetes but not metabolic syndrome, wrote Dr. Najmeddine Echahidi of the Centre de Recherche de l'Hôpital Laval, Quebec, and colleagues (J. Am. Coll. Cardiol. 2007;50:843-51).

The retrospective analysis involved 5,304 consecutive patients who underwent an isolated coronary artery bypass graft (CABG) during 2000-2004 at a single institution. An analysis of prospectively collected laboratory and physical data revealed that 46% met criteria for metabolic syndrome as set out by the National Cholesterol Education Program Adult Treatment Panel III.

The study's primary end point was death from any cause, either within 30 days of surgery or after any interval if the patient was not discharged from the hospital. Results were adjusted for gender, peripheral vascular disease, chronic obstructive pulmonary disease, and preoperative renal failure, MI, and stroke.

The overall unadjusted mortality was 1.6%, but was significantly higher (2.4%) among patients with metabolic syndrome, and significantly lower (0.9%) among patients without metabolic syndrome.

Several other factors also increased the risk of mortality after CABG. These included age older than 75 years (relative risk 3.4), BMI less than 18.5 kg/m^2 (RR 10.3), renal failure (RR 3.4), MI within 7 days before surgery (RR 4.0), urgent surgery (RR 2.5), and emergent surgery (RR 6.4).

—Robert Finn