Selected Abstracts from the January Issue of the European Journal of Vascular and Endovascular Surgery

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Clinical Relevance of Cranial Nerve Injury Following Carotid Endarterectomy

Fokkema M., de Borst G.J., Nolan B.W., Indes J., Buck D.B., Lo R.C., Moll F.L., Schermerhorn M.L., on behalf of the Vascular Study Group of New England. Eur J Vasc Endovasc Surg 2014;47:2-7.

Objectives: The benefit of carotid endarterectomy (CEA) may be diminished by cranial nerve injury (CNI). Using a quality improvement registry, we aimed to identify the nerves affected, duration of symptoms (transient vs persistent), and clinical predictors of CNI.

Methods: We identified all patients undergoing CEA in the Vascular Study Group of New England (VSGNE) between 2003 and 2011. Surgeon-observed CNI rate was determined at discharge (postoperative CNI) and at follow-up to determine persistent CNI (CNIs that persisted at routine follow-up visit). Hierarchical multivariable model controlling for surgeon and hospital was used to assess independent predictors for postoperative CNI.

Results: A total of 6,878 patients (33.8% symptomatic) were included for analyses. CNI rate at discharge was 5.6% (n = 382). Sixty patients (0.7%) had more than one nerve affected. The hypoglossal nerve was most frequently involved (n = 185, 2.7%), followed by the facial (n = 128, 1.9%), the vagus (n = 49, 0.7%), and the glossopharyngeal (n = 33, 0.5%) nerve. The vast majority of these CNIs were transient; only 47 patients (0.7%) had a persistent CNI at their follow-up visit (median 10.0 months, range 0.3-15.6 months). Patients with perioperative stroke (0.9%, n = 64) had significantly higher risk of CNI (n = 15, CNI risk 23.4%, $P < .01$). Predictors for CNI were urgent procedures (OR 1.6, 95% CI 1.2-2.1, $P < .01$), immediate re-exploration after closure under the same anesthetic (OR 2.0, 95% CI 1.3-3.0, $P < .01$), and return to the operating room for a neurologic event or bleeding (OR 2.3, 95% CI 1.4-3.8, $P < .01$), but not redo CEA (OR 1.0, 95% CI 0.5-1.9, $P = .90$) or prior cervical radiation (OR 0.9, 95% CI 0.3-2.5, $P = .80$).

Conclusions: As patients are currently selected in the VSGNE, persistent CNI after CEA is rare. While conditions of urgency and (sub)acute reintervention carried increased risk for postoperative CNI, a history of prior ipsilateral CEA or cervical radiation was not associated with increased CNI rate.

What is the Best Option for Elective Repair of an Abdominal Aortic Aneurysm in a Young Fit Patient?

Sandford R.M., Choke E., Bown M.J., Sayers R.D. Eur J Vasc Endovasc Surg 2014;47:13-8.

Objective: The lower procedural risk associated with endovascular aneurysm repair (EVAR) compared with open aneurysm repair (OAR) is well known. Younger patients are likely to represent a group at low perioperative risk. The long-term durability and late complications following EVAR may have more significance when considering the optimal treatment for young patients with a longer life expectancy. This study examined perioperative and long-term outcomes of young patients undergoing aneurysm repair by either open surgical or endovascular means.

Methods: A retrospective review of a prospectively collated database was performed. Patients undergoing elective aneurysm repair at the age of 65 years or younger between January 2000 and September 2010 were included. All EVAR patients were followed up in a nurse-led clinic. Data regarding long-term outcomes for patients undergoing open repair were gathered from case note review.

Results: There were 99 patients who underwent open repair and 59 patients who underwent endovascular repair. Groups were well matched in terms of demographics and co-morbidities. 30-day mortality was 1% after open repair. There were no perioperative deaths after endovascular repair. Overall, 30-day complication rates were 15% after open repair and 12% after EVAR. The nature of complications differed between the two groups with the EVAR group experiencing endoleaks and the OAR group demonstrating more cardiorespiratory complications. Mean follow-up was 75.5 months and there was a 14% reintervention rate after EVAR compared with 7% after OAR.

Conclusion: Young patients are likely to have a lower procedural risk for EVAR and OAR than described in published figures. Although mortality and complication rates in these two groups were similar, the nature of complications occurring following open surgery were often more significant than those occurring after EVAR. There remains a risk of late reintervention following either form of repair.

Variation in Maximum Diameter Measurements of Descending Thoracic Aortic Aneurysms Using Unformatted Planes Versus Images Corrected to Aortic Centerline

Rudarakanchana N., Bicknell C.D., Cheshire N.J., Burfitt N., Chapman A., Hamady M., Powell J.T. Eur J Vasc Endovasc Surg 2014;47:19-26.

Objective: Evaluation of variation in descending thoracic aortic aneurysm (dTAA) diameters measured on CT scans in different planes and by different observers and the potential impact on treatment decisions.

Methods: CT angiography of dTAA (N = 20) were assessed by three specialists, with measurements repeated after 1 month. Calliper measurements of maximum external diameters were made on unformatted images and perpendicular to the aneurysm centerline after image processing (corrected). Repeatability was assessed using Bland-Altman plots.

Results: Maximum corrected diameter measurements were smaller than axial measurements (66.3 ± 7.9 mm vs 74.9 ± 20.9 mm, $P < .001$). Both intraobserver and interobserver variation were less for corrected than for axial measurements (mean intraobserver differences 5.0 ± 3.8 mm vs 11.8 ± 9.3 mm, $P < .001$; mean interobserver differences 2.8 ± 2.5 mm vs 10.4 ± 14.0 mm, $P < .001$) and interobserver variation increased with aneurysm diameter for maximum axial but not corrected measurements. Using corrected rather than axial measurements could have changed treatment decisions in two patients (10%) using a treatment threshold diameter of 55 mm and 10 patients (50%) using a threshold of 65 mm.

Conclusion: Corrected diameters were smaller than axial diameters, could be measured with higher repeatability, and were subject to less interobserver variability. Using corrected vs axial measurements would have changed management decisions in up to half of the cases in this study.

Five-year Outcomes in Men Screened for Abdominal Aortic Aneurysm at 65 Years of Age: A Population-based Cohort Study

Svensjö S., Björck M., Wanhainen A. Eur J Vasc Endovasc Surg 2014;47:37-44.

Objective: Acquiring contemporary data on prevalence and natural history of abdominal aortic aneurysms (AAA) is essential in the effort to optimise modern screening programmes. The primary aim of this study was to determine the fate of a 65-year-old male population 5 years following an invitation to an aortic ultrasound (US) examination.

Methods: In this population-based cohort-study, men were invited to US examination at age 65, and were re-invited at age 70. Mortality, AAA repair, and risk factors were recorded. An AAA was defined as a diameter ≥30 mm, and a sub-aneurysmal aorta as 25-29 mm.

Results: In 2006-2007, 3268 65-year-old men were invited, and 2736 (83.7%) were examined. After 5 years, 24 had completed AAA repair (6 died within 0-4 years), an additional 239 had died, and 194 had moved. Thus, 2811 70-year-old men were re-invited, and 2247 (79.9%) were examined. The AAA prevalence increased from 1.5% at 65 to 2.4% (95% CI: 1.8 to 3.0) at 70, and of sub-aneurysmal aortas from 1.7% at 65 to 2.6% (2.0 to 3.3), at 70. Of 2041 with <25 mm at 65, 0.7% had an AAA at 70. Of 40 with a sub-aneurysmal aorta at 65, 52.5% progressed to AAA at 70. In a Cox regression analysis, sub-aneurysmal aorta at 65 (hazard ratio [HR] 59.78) and smoking (HR 2.78) were independent risk factors for AAA formation. Among 44 with AAA at 65, 22 completed AAA repair with no 30-day mortality.

Conclusion: AAA screening in a contemporary setting was safe at 5 years, with a single AAA rupture observed among non-attenders. Men with a screening detected AAA had a high repair rate and high non-AAA related mortality. AAA-formation was common among men with sub-aneurysmal dilatation, indicating a possible need for surveillance of this group.