

Protected carotid-artery stenting versus endarterectomy in high-risk patientsYadav JS, Wholey MH, Kuntz RE, et al. *New Engl J Med* 2004;351:1493-501.

Conclusion: Carotid stenting with the use of an emboli-protection device is not inferior to carotid endarterectomy for treatment of severe carotid artery stenosis in patients considered at high risk for carotid endarterectomy.

Summary: This is a long awaited publication of the Stenting and Angioplasty with Protection in Patients at High Risk for Endarterectomy (SAPPHIRE) trial. The authors conducted a randomized trial comparing carotid artery stenting with an emboli-protection device versus carotid endarterectomy in 334 patients with coexisting medial or anatomic conditions that may increase the risk of carotid endarterectomy. Patients included in the trial had at least 50% symptomatic carotid artery stenosis, or if the lesion was asymptomatic, a stenosis of at least 80%. The primary end point was somewhat unusual in that it consisted of cumulative incidents of cardiovascular events in 1 year. These included a composite of death, stroke, or myocardial infarction within 30 days after the intervention, or death or ipsilateral stroke between 31 days and 1 year. Recurrent carotid stenosis was not an end point.

The primary end point occurred in 20 patients assigned to the carotid stenting with an embolic-protection device group (cumulative incidence, 12.2%) and in 32 patients who underwent carotid endarterectomy (cumulative incidence, 20.1%; absolute difference, -7.9%; 95% confidence interval, -16.4% to 0.7%; $P = .004$ for non-inferiority, and $P = .053$ for superiority). In this study, approximately 20% of the patients were >80 years old and 22% were entered for recurrent carotid stenosis. Less than 30% of the patients had symptomatic stenosis. There were no differences in the cumulative incidence of the primary end point at 1 year in the patients with symptomatic stenosis (16.8% among those who received a stent vs 16.5% among those who underwent endarterectomy, $P = .95$). For patients with asymptomatic carotid stenosis, the cumulative incidence of the primary end point at 1 year was lower among those who received a stent (9.9%) than among those that underwent carotid endarterectomy (21.5%), $P = .02$.

Comment: This study, first published in *USA Today*, has now appeared in the *New England Journal of Medicine*. The differences in the primary end points between the endarterectomy and stented group appear to be primarily driven by the higher number of myocardial infarctions, primarily non-Q wave myocardial infarctions, in the endarterectomy group. Nearly 75% of the patients were treated for asymptomatic stenosis. The applicability of the results of this trial for the overall care of patients with carotid artery disease seems limited. Given the narrow therapeutic index of intervention for asymptomatic carotid stenosis, particularly recurrent carotid stenosis, it is likely the large majority of patients entered into the trial would not have been, in many practices, suitable candidates for any carotid intervention, regardless of whether it was endarterectomy or stent.

Late survival after elective repair of aortic aneurysms detected by screeningTaylor JC, Shaw E, Whyman MR, et al. *Eur J Vasc Endovasc Surg* 2004;270-3.

Conclusion: Men who undergo elective repair of an abdominal aortic aneurysm (AAA) originally detected by screening have better later survival than men with AAAs discovered incidentally and repaired electively.

Summary: Between 1990 and 1998, 424 men underwent elective AAA repair. Aneurysm repairs were performed for 181 AAAs detected in an aneurysm screening program and in 243 where the aneurysm was diagnosed incidentally. Follow-up survival data were collected until 2003. There was a minimum of 5 years of follow-up.

Postoperative 30-day mortality after AAA repair was lower in men whose aneurysms were detected by screening (4.4%) compared with those detected incidentally (9.0%). Similarly, 5-year survival (78% vs 65%) and 10-year survival (63% vs 40%) were better after repair of a screen-detected AAA than after repair of an AAA detected incidentally ($P < .0003$ at all time intervals). Patients whose aneurysms were detected incidentally were repaired at an older age than those whose aneurysms were detected by a screening study (71.23 years vs 67.1 years).

Comment: The greater the patient's potential life span, the greater the possibility of a procedure to prolong survival. The paper does not necessarily indicate that aneurysm screening programs increase overall survival. The paper does indicate that participants in aneurysm screening programs have their aneurysms repaired at an earlier age and therefore have greater potential to derive survival benefit from the procedure. The results may also indicate a greater tendency of younger patients to participate in screening programs than older patients.

Carotid plaque echolucency increases the risk of stroke in carotid stenting: The Imaging in Carotid Angioplasty and Risk of Stroke (ICAROS) studyBiasi GM, Froio A, Diethrich EB, et al. *Circulation* 2004;110:756-62.

Conclusion: Increased echolucency of carotid artery plaques increases the risk of stroke associated with carotid artery angioplasty and stenting (CAS).

Summary: This is a report of 418 cases of CAS derived from the the Imaging in Carotid Angioplasty and Risk of Stroke (ICAROS) Registry and collected from 11 international centers. The authors used high-resolution B-mode duplex scanners in conjunction with a computer-assisted index of echogenicity (gray scale median [GSM]) to quantify carotid plaque echolucency. GSMs were classified as <25 or >25. Neurologic deficits during CAS and in the postprocedural period were recorded.

Overall, the rate of neurologic complications was 3.6% (major stroke, 1.4%; minor stroke, 2.2%). Eleven strokes occurred in patients whose carotid plaque GSMs were <25 ($n = 155$, 7.1%), and 4 strokes occurred in patients with GSMs > 25 ($n = 263$, 1.5%, $P = .005$). Patients with >85% carotid stenosis had a higher rate of stroke ($P = .03$). Cerebral protection devices appeared effective in patients with GSMs > 25 ($P = .01$) but did not appear effective in those with GSMs ≤ 25. Multivariable analysis indicated that GSM (odds ratio [OR], 7.11; $P = .002$) and severity of stenosis (OR, 5.76; $P = .010$) were independent predictors of stroke.

Comment: The data suggest that patients with more echolucent plaques and with higher degrees of internal carotid artery stenosis are at higher risk of neurologic complications with carotid artery stenting. The embolic potential of soft (echolucent) plaques is obvious to all who have visualized such plaques at the time of carotid endarterectomy. The authors also suggest the higher neurologic complication rate in patients with more severe stenosis may reflect a higher number of embolic particles associated with crossing a tight lesion with an endovascular device.

A combination of statins and beta-blockers is independently associated with a reduction in the incidence of perioperative mortality and non-fatal myocardial infarction in patients undergoing abdominal aortic aneurysm surgeryKertai MD, Boersma E, Westerhout CM, et al. *Eur J Vasc Endovasc Surg* 2004;28:343-52.

Conclusion: A combination of statin and β-blocker therapy in patients undergoing abdominal aortic aneurysm surgery is associated with reduced perioperative mortality and nonfatal myocardial infarction.

Summary: The authors studied 570 patients who underwent abdominal aortic aneurysm repair between 1991 and 2001. The mean age was 69 ± 9 years and 486 were men. Data were analyzed for clinical risk factors (history of myocardial infarction, age >70, diabetes mellitus, renal failure, stroke, pulmonary disease, and heart failure) as well as use of statins and β-blockers and whether they had undergone a dobutamine stress echo test. The main end point was a composite of perioperative mortality and myocardial infarction within 30 days of surgery.

Myocardial infarction or death occurred in 51 (8.9%) patients. The incidence of the composite end point was lower in statin users compared with nonusers (3.7% vs 11.0%, odds ratio [OR], 0.31; 95% confidence interval [CI], 0.13 to 1.74; $P = .01$). The benefit for statin use remained after correcting for covariants. β-Blocker use was also associated with reduction in the composite end point (OR, 0.24; 95% CI, 0.11 to 0.54). Patients with more severe risk factors appeared to particularly benefit from a combination of statin and β-blocker use.

Comment: It is now well appreciated that β-blockers lower perioperative mortality and adverse cardiovascular events in patients undergoing peripheral vascular surgery. It is also appreciated that statins lower long-term mortality in patients with peripheral vascular disease. Emerging data such as these indicate that statin therapy may also have beneficial effects in the perioperative period as well.

Transient ischemic attacks are more than "ministrokes"Daffertshofer M, Mielke O, Pullwitt A, et al. *Stroke* 2004;35:2453-8.

Conclusion: Transient ischemic attacks (TIA) are not so "benign," with significant risks of early stroke, death and disability.

Summary: The clinical significance of TIA is controversial. An estimated 4.9 million people in North America do not seek medical attention despite TIA symptoms (*Neurology* 2003;60:1429-34). In this study, the authors compared a large cohort of hospitalized TIA and stroke patients derived from a stroke quality-assessment study. Prehospital and in-hospital procedures, symptoms, complications, outcomes, and therapies were derived from a representative sample from stroke-treating hospitals ($n = 82$) in southwestern Germany. Follow-up was attempted 6 months after discharge. Points analyzed include death or dependency in activities of daily living as determined by a modified Rankin scale (mRS) of 3 to 6, Barthel index of less than 95, or institutionalization in a nursing home.