MRC Asymptomatic Carotid Surgery Trial (ACST): Successful Carotid Endarterectomy Prevents Disabling and Fatal Strokes

NOTES

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Among patients with substantial carotid artery narrowing but no neurological symptom (stroke or transient ischemia) the balance of surgical risks and long-term benefits from carotid endarterectomy (CEA) was unclear.

From 1993 to 2003, 3,120 asymptomatic patients were randomized equally between immediate CEA (half got CEA by 1 month, 88% by 1 year) and indefinite deferral of any CEA (only 4% per year got CEA) and were followed for up to 5 years (mean 3.4). Kaplan-Meier analyses of 5-year risks are by allocated treatment.

The risk of stroke or death within 30 days of CEA was 3.1% (95% CI 2.3–4.1). Comparing all allocated immediate CEA versus all allocated deferral, but excluding such perioperative events, the 5-year stroke risks were 3.8% versus 11% (gain 7.2% [CI 5.0–9.4], $p < .0001$). This gain chiefly involved carotid territory ischemic strokes (2.7% vs 9.5%, gain 6.8% [CI 4.8–8.8], $p < .0001$), of which half were disabling or fatal (1.6% vs 5.3%, gain 3.7% [CI 2.1–5.2], $p < .0001$), as were half the perioperative strokes. Combining the perioperative events and strokes, net 5-year risks were 6.4% versus 11.8% for all strokes (net gain 5.4% [CI 3.0–7.8], $p < .0001$); 3.5% versus 6.1% for fatal or disabling strokes (net gain 2.5% [CI 0.8–4.3], $p = .004$); and 2.1% versus 4.2% just for fatal strokes (net gain 2.1% [CI 0.6–3.6], $p = .006$). Subgroup-specific analyses found no significant heterogeneity in perioperative hazards or (apart from the importance of cholesterol) postoperative benefits. These benefits were separately significant for males and females; for about 70, 80, and 90% carotid artery narrowing on ultrasound; and for entry age < 65 and 65 to 74 years (though not for 75+ years, where the mean age at entry was about 80 years, and half die within 5 years from unrelated causes). Full compliance with allocation to immediate CEA or deferral would, in expectation, have produced slightly bigger differences in numbers operated, and hence in the net 5-year benefits. The 10-year benefits are not yet known.

In asymptomatic patients aged < 75 years with carotid diameter reduction about 70% or more on ultrasound (and much Aspirin, anti-hypertensive, and, recently, statin therapy), immediate CEA halved the net 5-year stroke risk from about 12% to about 6% (including the 3% perioperative hazard). Half this 5-year benefit involved disabling or fatal strokes. But, outside trials, poor patient selection or bad surgery could obviate such benefits.