Carotid endarterectomy for asymptomatic stenosis – firm on the uncertainty

The carotid bifurcation is exposed and the surgeon is about to do the endarterectomy (courtesy of Alison Halliday).
People with asymptomatic carotid stenosis, which is almost always due to atheroma, are seldom asymptomatic. After all, atheroma is generally a widespread disease – if it affects one artery it probably affects others. So although carotid stenosis may be asymptomatic in the sense that there have been no downstream symptomatic ischaemic events in the brain or eye, the patient will often have had symptoms in the distribution of the contralateral carotid artery, or the vertebrobasilar system, or symptoms of coronary heart or peripheral vascular disease. Sometimes, the so-called asymptomatic carotid artery has in fact been the cause of symptoms, but many months or years previously, so it is not recently symptomatic – the meaning of asymptomatic varies, a point to be watched when reading the literature.

Occasionally an asymptomatic stenosis is picked up by a doctor hearing a bruit in the neck during the course of an examination for some completely unrelated problem. Rather more often the stenosis comes to light when patients are being worked up for symptomatic carotid stenosis on the other side, or for major surgery below the neck, in particular coronary artery surgery.
So what to do when an asymptomatic stenosis is discovered? The patient may well, and probably should, be taking antiplatelet, cholesterol lowering and blood pressure lowering drugs for symptoms in other arterial territories, getting some exercise and a decent diet, and hopefully not smoking. The additional option of carotid endarterectomy is tempting. After all, the artery is only just under the skin, and the operation is fairly trivial in these days of sophisticated general or regional anaesthesia. But, on the other hand, asymptomatic stenosis, unlike recently symptomatic stenosis, has a rather benign prognosis unoperated, even when > 70%; looking across several studies the risk of ipsilateral ischaemic stroke (i.e. the sort of stroke likely to be a consequence of the stenosis) is probably only about 2% per annum, on average. And, given the all but inevitable widespread atheromatous disease, the patient is more likely to die of a heart attack in the next few years than of an ipsilateral ischaemic stroke (Warlow et al. 2001).

As usual with any intervention, there is therefore a potential benefit (prevent ipsilateral ischaemic stroke over the next few years by operating) and a potential risk (cause stroke, or myocardial infection by operating, and occasionally death). What is the balance of benefit and risk, in general and in an individual patient? As usual, the best way to answer the ‘in general’ question is by looking for the results of a randomised controlled trial (RCT), and if there is more than one, a meta-analysis of all the available RCTs. Unusually for a surgical intervention, there is now quite a lot of randomised evidence available, at least when no other surgery is being contemplated in the very near future (where there remains extreme uncertainty what to do, and when, about any asymptomatic carotid stenosis).

The Cochrane review estimated that surgery, including the early risk, for severe stenosis reduced the relative risk of perioperative stroke or death or subsequent ipsilateral stroke by about one-quarter (Chambers et al. 2004) and another review put the figure at about one-half (Benavente et al. 1998). But, given the low risk in the no surgery group, the number-needed-to-operate to prevent one stroke over five years is about 20. Rounding the numbers and given the risk of stroke without surgery at say 10% in five years, and the stroke risk of surgery and a few strokes after successful surgery at about 5%, that is an absolute risk reduction of 5%. Furthermore, an individual does have to expect to live for a few years to make any advantage of surgery worthwhile. That doesn’t sound a particularly good buy for the funders of health care, or a particularly good bet for the patient: a 1 in 10 chance of being in the benefited group (i.e. was going to have a stroke but it is prevented) rather than in the harmed group (1 in 20 chance of a surgical stroke) or in the group that was never going to have a stroke even without surgery. Not surprisingly most of us wanted better evidence of overall benefit before recommending surgery, and in particular better ‘cost-effectiveness’ in the sense of a much smaller ‘number-needed-to-operate’. So, everyone was eagerly awaiting the results of the only ongoing RCT in the area – the Asymptomatic Carotid Surgery Trial (ACST) (MRC Asymptomatic Carotid Surgery Trial Collaborative Group 2004).

Although it was well conducted and the largest ever trial of carotid endarterectomy, it has not, irritatingly, got us very much further:
- the relative risk reduction of stroke over about five years was much the same as anticipated from the meta-analyses, but at least we now
知道这适用于预防不良中风，以及轻度中风；
- 中风风险在未手术组中基本相同（约12%）；
- 手术风险也基本相同（约3%）；
- 加上手术后发生的少数中风，绝对风险降低也基本相同（约6%）。

这使得我们几乎回到了原点！而且，对于致残或致命的中风，这个数字更加让人沮丧，为40。这种情况可能甚至更糟，如果未来未手术的风险比现在更低，由于更广泛的血压和胆固醇降低。我们知道更多关于手术的，但对个别患者如何做，仍然没有明确的结论。

问题是，试验没有包含足够的高风险中风患者，以至于即使早期手术风险很小，我们也不能确定在个别患者中是否值得采取手术。

有两种方法可以解决这个问题。试图筛选出那些有更高未手术风险的无症状颈动脉狭窄患者，但目前尚无有效方法。或者，对所有ACST患者进行为期5年的随访，因为如果未来未手术风险加倍，达到约24%，而手术患者仍然很少有中风，那么进行手术的患者数量将会下降。

但是，如果外科医生（他们可能没有其他选择）对那些被分配了不手术的患者进行手术，这个策略将被破坏。除非研究者能够获得进一步随访的资金，这是试验成本的一小部分。

令人惊讶的是，由ACST所资助的UK MRC拒绝资助进一步的随访，因此了解颈动脉手术的未来情况并不乐观。再者，如果经导管血管内支架手术被广泛使用，这将更加糟糕。

在同时，对个别患者该怎么办？父权主义的答案是尽量说服他们不要手术，除非有理由认为患者在没有手术的情况下，中风风险更高，但很难找到一个好方法来判断这一点（也许是一个中年，没有临床冠心病证据，可能再活20年？）。

政治正确答案是向患者提供本编辑的信息，以及任何其他可用的信息，并与患者分享决策的责任。不舒服。

**COMPETING INTEREST**

我是ACST数据监测委员会的主席。

**REFERENCES**


