

Letter to the Editor

TO THE EDITOR

Re: Auditing carotid endarterectomy: a regional experience. J. Max Findlay, Linda Nykolyn, Tracey B. Can J Neurol Sci 2002; 29:326-332

We read, with great interest, the audit of carotid endarterectomy by Findlay et al.¹

We agree with the authors that the current evidence suggests that the risk of stroke among individuals with asymptomatic carotid artery stenosis is relatively low and at present there are no proven criterion to identify a subgroup that will derive benefit from carotid endarterectomy. Henceforth, there is a general agreement among physicians that most of the asymptomatic patients should be managed conservatively and the most important step to prevent future strokes in these individuals is to detect and treat the vascular risk factors.

In this regard, we would like to bring attention to another important observation by Inzitari et al (North American Symptomatic Carotid Endarterectomy Trial collaborators).² In their study, the authors concluded that not all the future strokes in the asymptomatic individuals will originate from stenosed internal carotid artery. Their findings suggested that almost half the strokes in the territory of an asymptomatic carotid artery are caused by lacunar and cardioembolic disease and are not of large artery origin. In this study, the investigators excluded the patients with cardiac diseases which can cause emboli. Consequently the number of cardioembolic strokes among patients with asymptomatic carotid artery stenosis was perhaps underestimated. This observation has two important clinical implications:

- 1) The decisions about carotid endarterectomy in asymptomatic patients should take into account the probable causes of future strokes as endarterectomy will not prevent the strokes of cardioembolic origin and lacunar strokes are less likely to be of large artery origin.
- 2) In patients with asymptomatic carotid artery disease, the physicians should carefully look for and treat the potential cardiac embolic source, alongside management of vascular risk factors and patient education as advised by Findlay et al.

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1. J. Max Findlay, Linda Nykolyn, Tracey B. Lubkey, et al. Auditing carotid endarterectomy: a regional experience. *Can J Neurol Sci* 2002; 29:326-332.
2. Domenico Inzitari, Michael Eliasziw et al. The causes and risk of stroke in patients with asymptomatic internal carotid artery stenosis. *N Eng J Med* 2000;342:1693-1700.

Re: Tests of motor function in patients suspected of having mild unilateral cerebral lesions. Teitelbaum JS, Eliasziw M, Garner M. Can J Neurol Sci 2002; 29: 337-344.

As any neurovascular event can be a harbinger for future and potentially more serious cerebral lesions, the identification of sensitive, specific, and predictive tests of motor function is certainly warranted in patients suspected of having had a stroke. Teitelbaum et al¹ have done a most thorough job of examining multiple tests of motor function, including a segmental motor examination.

While I would not impugn their findings, I think it fitting to make two points. First, while there are statistical advantages (as Teitelbaum et al found) to employing multiple tests, a busy clinician seldom needs to perform a larger number of tests to discern the presence of motor deficits associated with stroke. Different voluntary motor tasks, particularly those focused on muscle strength, tend to reflect a common underlying construct or factor.² Thus patients with stroke who are weaker in one action (eg. grip strength) will tend to be weaker in other actions (eg. knee extension) as well. Second, most of the voluntary maneuvers described by Teitelbaum et al are not particularly demanding and are subject to ceiling effects. This is particularly true of the items of the segmental motor examination. As grades of 5/5 can be given to muscles that are only 50 percent of normal³ and as grades of 4/5 can be assigned to muscles whose strength is only 10-40 percent of normal,⁴ strength tests relying on the subjective grading of force are grossly inadequate to identify mild or moderate weakness. This inadequacy can be circumvented through the use of dynamometry. Specifically, a hand-grip dynamometer can be used to measure bilateral grip strength in a matter of seconds. Thereafter, deficits can be identified by comparing measurements between sides or by comparing measurements with available reference values.⁵ By employing hand-grip dynamometry in lieu of some (if not most or all) of the tests described by Teitelbaum, I suspect that clinicians will be able to more rapidly and accurately identify the majority of patients with motor deficits from stroke.

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1. Teitelbaum JS, Eliasziw M, Garner M. Tests of motor function in patients suspected of having mild unilateral cerebral lesions. *Can J Neurol Sci* 2002; 29: 337-344.
2. Bohannon RW, Andrews AW. Relationships between impairments in strength of limb muscle actions following stroke. *Percept Motor Skills* 1998; 87: 1327-1330.
3. Beasley WC. Influence of method on estimates of normal knee extensor force among normal and post-polio children. *Phys Ther Rev* 1956; 36: 21-41.
4. Dvir Z. Grade 4 in manual muscle testing: the problem with submaximal strength assessment. *Clin Rehabil* 1997; 11: 36-41.
5. Mathiowetz V, Kashman N, Volland G, Weber K, Dowe M. Grip and pinch strength: normative data for adults. *Arch Phys Med Rehabil* 1985; 66: 69-72.