Common Carotid Artery Intima-Media Thickness: Towards a Definition of Abnormal Values in Symptomatic Cerebrovascular Disease

To the Editor:

We welcome the recent article by Tsivgoulis and colleagues showing that higher values of common carotid artery intima-media thickness (CCA-IMT) may represent an independent risk factor for stroke recurrence.1 We reached the same conclusion after carrying out a study, independently planned and executed in a different geographical area in Greece.2 We had previously shown that increased CCA-IMT values are independently associated with de novo development of cognitive impairment during the first year after their stroke.3 These results suggest that CCA-IMT measures may be of clinical use in the long-term management of stroke patients. We would, therefore, like to raise a few issues.

In our study, 284 patients with first ever ischemic stroke were followed up to 12 months. Of those, 5.6% (95% CI: 3.5% to 9.0%) had a recurrent stroke (all ischemic). Patients with recurrent strokes had significantly higher CCA-IMT values compared with the ones who remained recurrence-free (0.881±0.117 mm versus 0.789±0.156; P=0.008). Among all the parameters tested (age, sex, history of arterial hypertension, diabetes mellitus, hyperlipidemia, ischemic heart disease, current smoking, size/side of the lesion and degree of carotid stenosis) only CCA-IMT was found to be an independent risk factor for recurrent strokes.

The most striking point is that the mean CCA-IMT in the whole population, as well as the difference in mean CCA-IMT values between those with and without recurrent stroke, was lower in our study compared with that of Tsivgoulis et al. The implication is that the 2 studies suggest different cut-off points for increased risk of future events in stroke patients. The ultrasonographic methodology, population characteristics and risk-factor profiles were similar in both studies. We assume that the differences can be most probably attributed to the specific technique used in each laboratory including the operator’s judgment. Such discrepancies could be even larger with an entirely different measurement protocol: for example, multiple-site measurements. A common definition of abnormal CCA-IMT values seems under these circumstances problematic. It might be useful for each site to produce its own range of normal values by creating a local database of measurements from subjects with and without a stroke. It would be interesting to see, as we suggested previously, whether different cut-off points apply to patients with symptomatic versus asymptomatic cerebrovascular disease.

Another issue is the different definition of stroke recurrence used between studies. We chose, as previously suggested, not to record recurrent events that occurred within the first month after the index stroke,4 because they could have been, for instance, attributable to an unstable ulcerated carotid plaque. Our goal was to demonstrate a clear association between CCA-IMT and purely future events, because in previous work we found no association between CCA-IMT and short-term outcome after stroke.5 Moreover, different definitions also affect the estimated rate of recurrence per se. A very recent population-based study showed a mean cumulative recurrence rate of 7.7% of which 1.5% occurred within the first month.6

In conclusion both studies found that among stroke patients, ie, individuals with an increased risk of vascular events, those with higher CCA-IMT values are more vulnerable to recurrences, regardless the mechanism of the index stroke. CCA-IMT could reflect the detrimental effect of several risk factors on the arterial wall and thus associate strongly with recurrences, which are thought to be of multifactorial etiology. Purpose-designed studies are needed to verify whether CCA-IMT measures can be used in clinical practice to identify patients in higher risk for future events. Methodological variations among different sites and the presence of cerebrovascular disease should be taken into account while attempting to move towards a definition of abnormal CCA-IMT in stroke patients.

Disclosures

None.

References

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