Endovascular management of unruptured intracranial aneurysms: the dawn of a multidisciplinary treatment paradigm

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Treatment strategies for management of unruptured intracranial aneurysms are best decided by multidisciplinary teams.

Non-invasive brain-imaging tools have improved constantly over the last two decades, but their increased accessibility leaves doctors with a growing number of patients diagnosed with intracranial vascular disease at a stage before clinical symptoms or actual stroke have occurred. Unruptured aneurysms, non-haemorrhagic brain arteriovenous malformations, silent cavernomas and asymptomatic arterial stenoses—to name but a few—constitute vexing management problems in current clinical practice, as treatment decisions have to take into account the risk of invasive versus non-invasive strategies.^{1,2}

On the basis of a careful review of selected literature sources and experiences at their own treatment centre, Pouratian *et al*³ provide a useful overview on factors influencing current invasive treatment strategies for patients diagnosed with an unruptured intracranial aneurysm. Their review leaves little doubt that the matter cannot be easily solved, and that there is still a long way to go on the road to evidence-based decision making. No controlled trial data are readily available, and, sadly, the impetus of the many recently published treatment series is establishing endovascular versus surgical aneurysm management, rather than testing prospective principles for the indication of invasive treatment.

Much can be learnt from the history of internal carotid artery disease management. It is one of the most encouraging examples on how painstaking clinical research succeeded in implementing neurological and morphological decision criteria for treatment of both symptomatic and asymptomatic lesions. The carotid surgery trials not only established the clinical benefit of interventional treatment in defined subgroups at risk but also helped to foster the idea that multidisciplinary decision

making is the gold standard of management of neurovascular patients. Carotid stenosis trials have now successfully (and rightfully) passed on to the stage of comparing risk-benefit profiles of coexisting treatment modalities (ie, surgical *v* endovascular therapy). Given their high prevalence in the population, it appears almost anachronistic by comparison that unruptured intracranial aneurysms are commonly discussed under the prospect of available treatment options (ie, technical feasibility of surgical clipping *v* endovascular coiling), whereas no proven algorithms have as yet been established, in principle, regarding the indication for invasive patient management. A single prospective treatment trial, the TEAM study,⁴ is currently under way, but it will take many years before any conclusions can be drawn from the results.

In this current clinical dilemma, many centres agree that management decisions for unruptured aneurysms are best handled by a multidisciplinary team: clinical patient assessment including symptoms, neurological status, and risk factor profiles are usually best evaluated by a vascular neurologist. The interpretation of imaging studies, including aneurysm morphology, topography and technical accessibility, generally needs the expertise of an interventional neuroradiologist and a vascular neurosurgeon. A routine conference may provide a customary forum for joint discussions of individual cases. Balancing invasive and non-invasive management options will necessarily take into account not only the size and location of the aneurysm but also the age, symptoms, clinical condition, risk factor profile and personal attitude of the patient. In patients with high risk, the team may seek further advice from anaesthetists or colleagues from other disciplines familiar with the case. In

addition, currently available guidelines from healthcare professionals for the treatment of intracranial aneurysms⁵ provide an unprejudiced source of available observational data and expert opinion. No written guideline, however, can possibly substitute the experience of a multidisciplinary team taking individual management decisions as a group.

Finally, there is the patient. Any recommendation given by the local team will need to be translated and discussed with the person who is most affected by the condition. The ultimate aim is to make the patient understand the possible risks and benefits of any proposed treatment, invasive or not. If the group advises against intervention, the patient needs to understand that non-invasive management may constitute the most reasonable, beneficial and therefore positive treatment decision, even though follow-up imaging studies may be necessary. By inference from previous epidemiological studies, any patient harbouring unruptured aneurysms should be advised to reduce vascular risk factors that could favour both rupture and new aneurysm formation. In particular, patients should be advised to stop smoking, to keep alcohol consumption low and to avoid unusual physical exertion that could lead to a sudden increase in arterial blood pressure.^{1,6}

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