

Brain screening and incidental findings: flocking to folly?

Human flocking behaviour—in either a positive or a negative direction—is a historically characteristic response to high-profile scientific innovation and publication.¹ Past examples of such behaviour in the neurological sciences include: the popularisation of psychosurgery to treat the mentally ill and combat depression, mood disorders, and antisocial behaviours;² rejection of the measles, mumps, and rubella (MMR) vaccine, for fear of a correlation with autism, after publication of an article by Wakefield and colleagues;³ and prescription usage of methylphenidate (Ritalin) for treatment of attention-deficit hyperactivity disorder in almost epidemic proportions.⁴ A recent paper by Vernooij and colleagues⁵ that describes brain abnormalities in the general population has the potential to generate a contemporary flocking effect with a profound effect on the work of clinicians and neurology professionals.

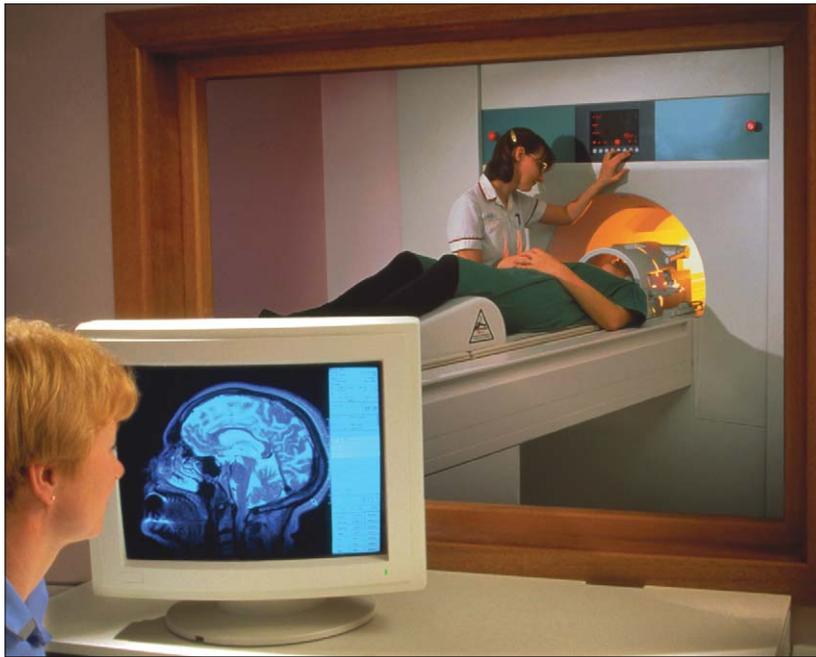
The researchers describe the occurrence of incidental findings in the brain of a cohort of 2000 Europeans aged 45–97 years (mean age 63 years). This large, carefully constructed, albeit add-on MRI study reaffirms data from smaller studies on the frequency of unexpected clinical findings. The overall result reported is that 8–9% of people in this age group have a silent, asymptomatic anomaly in the brain that might or might not be clinically significant. If the anomaly is significant, it is likely to be a vascular disease or a consequence of a vascular episode. Preceding studies have shown similar results from MRI, with 2–8% of anomalies judged to be clinically significant and to require follow up.^{6,7} A study of children and young adults has shown that unexpected findings in young people are rare but require urgent follow up.⁶ In adults over the age of 65, abnormalities occurred in as many as 45% of participants but tended to be related to age and require little if any immediate clinical attention.⁷

Why is this new study by Vernooij and colleagues important? For clinical neurological medicine, ever advancing knowledge about baseline rates and types of brain abnormality in a large population increases the ability to anticipate and provide accurate diagnoses of disorders and comorbidities, accurate prognoses, and appropriate intervention when needed. For research, robust information about the potential for unexpected

abnormalities that might affect the quality of data, and about the overall management of human participants in research, is equally vital. However, neither of these justifications fully explains the widespread attention attributed to this paper, including worldwide coverage by Associated Press and other news agencies. Rather, the justification lies in the meaning of the results to the average person who is concerned about maintenance of their health and personal wellbeing. The flocking that the community of practitioners and researchers in neurology might now witness is by people who are free of neurological symptoms but who nonetheless want answers to questions, perhaps even curiosities, about their brain health. Is there a ticking bomb in my brain? Is there a bomb that might never go off? Is there disease that might respond to treatment? Is there disease for which, with no current hope of cure, life plans should be set in place?

There is nothing inherently wrong with the desire for knowledge, and western culture is marked by a hunger for innovation designed to maximise it. As long as the endeavour is put into a proper context, knowledge is power. Therefore, the question is not only why a person with no sign of neurological disease might wish to have a brain scan, but rather what that person—and consequently the person's physician—will do with that information.

The finding of a silent clinical pathology that is life-threatening but treatable is surely serendipitous. The same is true for a finding that suggests a predisposition to disease for which the risk can be reduced with intervention. But what of findings for which the clinical significance is unknown? Follow-up tests might have a high degree of morbidity both in terms of physical and psychological costs, and the costs to any type of health-care system will be substantial. Because any brain anomaly is potentially frightening, patients might demand intervention, even when there is no medical justification. What of a finding that suggests loss of memory, verbal, or executive functioning? For some of the one in 13 people who according to Vernooij and colleagues might have anomalies, such knowledge might lead to life plans that maximise personal fulfilment during the years when it can still be achieved. For others, positive results might be devastating. Physicians must therefore



help patients to assess both why and what when pursuing medical requests that might have life-changing, and not necessarily life-enhancing, implications.

At present, screening of brains is not a routine procedure like breast screening and colon screening. But

there is no doubt that when the headline of the morning paper or internet screen reads *Silent abnormalities lurk within ageing brains*⁸ and *Brain strain*⁹, cautious and measured advice by the professional community is both a practical and an ethical challenge.

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Dementia—call for papers

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Around 25 million people worldwide have dementia, and the number of people with dementia is predicted to exceed 80 million by 2040.¹ *The Lancet* and *The Lancet Neurology* are therefore issuing a joint call for papers on dementia to coincide with the 11th International Conference on Alzheimer's Disease and Related Disorders (ICAD), to be held in Chicago, IL, USA, from July 26–31, 2008.

We are particularly interested in papers that describe the results of randomised trials and other studies that will have an important effect on the diagnosis or treatment of dementia in clinical practice. We are especially interested in reports of original research that will be presented at the ICAD meeting, but we also welcome other suitable articles; accepted manuscripts will be published at the time of the conference.

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