Nigel Hoggard

Re: Development and initial testing of normal reference MR images for the brain at ages 65–70 and 75–80 years

Does assessing brain atrophy on an individual patient basis need correction to peak brain volume or a surrogate?

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Sir,
I read with great interest the article by Farrell et al. [1] about developing normal reference MR images for the brain in older people, between 65 and 80 years of age. It is a commendable effort that addresses the difficult issue of what is a normal MR brain scan; their rigorous exclusion of disease which may be common but not “normal” for age, such as hypertension in the elderly, is especially welcomed. When reading their manuscript and the reference given for the methodology, I could not identify if brain volumes were normalised to the intracranial volume. Surely when a neuroradiologist judges if a brain is atrophic, or not, it is not compared with some internalised ideal of brain volume for age? I believe what we do is assess the volume of the CSF spaces, both the ventricles and the extra-axial ones. Whether done consciously or not, this is effectively correcting to intracranial volume. This is how, for example, the Rotterdam Scan study [2] was conducted and indeed most studies that involve measurement of brain volume are done, right back to the approach being described by Philips et al. [3] in 1998. An indi-

vidual’s brain is atrophic if it has declined in volume compared with its original peak volume more than statistically expected. Use of intracranial volume is only a surrogate of the peak brain volume and obviously has its limitations, but at least it represents an attempt at correction for this natural variation between people. Given the quality of the data present in the study, if the authors have not done so, could they perhaps produce data on the incidence of white matter disease on this cohort? This would also be a very welcome addition to the literature.

References

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3. Phillips MD et al (1998) Comparison of T2 lesion volume and magnetization transfer ratio histogram analysis and of atrophy and measures of lesion burden in patients with multiple sclerosis. *AJNR Am J Neuroradiol* 19:1055–1060

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