

Template for assessing brain volume loss with ageing

Author: J Wardlaw

Interpretation of brain images from older patients requires knowledge of changes that occur with healthy ageing. We constructed and tested a reference template for older subjects. We used MR images from normal subjects aged 65–70 and 75–80 to generate average age-specific images. We ranked the T2-weighted images by worsening brain tissue loss to create a diagram of key centiles. Two neuroradiologists tested the template during routine reporting; eight radiologists read 99 MR examinations without and then with the template. Fifty-four subjects (65–70 years) and 25 subjects (75–80 years) formed the reference images. For the two neuroradiologists, the reference template reduced the abnormal scan reporting from 28/42 without to 3/42 with the template. Of 99 MR examinations assessed by eight radiologists, 39/58 scans (67%) reported as moderate or severe atrophy without the template were reported as normal with the template ($p=0.00011$). Reference templates of the brain at older ages can “calibrate” radiology reporting. They could also be useful for research into ageing and related conditions. Larger numbers of examinations from more diverse populations and at different ages are required to increase the versatility of these templates.

(see full paper for details. Farrell C, et al. Development and initial testing of normal reference MR images for the brain at ages 65–70 and 75–80 years. *European Radiology* 2009;19: 177–183.)

Age: 65 - 70

Atrophy Ranking

Age: 75 - 80

