

Radiomics-informed brain age matrices for classifying mild cognitive impairment converters

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INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
- Brain age model, including estimated brain age and brain-predicted age difference (brain-PAD), has shown great potentials for serving as imaging markers for monitoring normal ageing. - This study aimed to investigate the brain age models in normal ageing and mild cognitive impairments (MCI) converters and their values in classifying MCI conversion.	Longitudinal structural MRI scans from the Open Access Series of Imaging Studies, including baseline, 1-year and 3-year follow-up assessments, were used in this study. Normal ageing (NA) adults (n=32) and MCI converters (n=22) Radiomics: total intracranial volume (TIV), gray matter volume (GMV) and cortical thickness. In estimation stage, pre-trained brain age model used the data from the Cambridge Centre for Ageing and Neuroscience (Cam-CAN) project (N=609, age range: 18-90 years).	- With comparable chronological age, MCI converters showed significant increased left GMV-based brain age than NA adults at all time points. Higher brain-PAD scores were associated with worse global cognition. - Acceptable classification performance of left GMV-based brain age (AUC=0.703) was found, which could differentiate the MCI converters from NA adults at the baseline.	- This is the first demonstration that MRI-informed brain age models exhibit feature-specific patterns. - The greater GMV-based brain age observed in MCI converters may provide new evidence for identifying the individuals at the early stage of neurodegeneration. - Our findings added value to existing quantitative imaging markers and might help to improve disease monitoring and accelerate personalized treatments in clinical practice.	A. Calendar Brain features Chronological age (CA) Brain age (BA) CONTACT Please contact: Dr. LU Hanna Email: hannalu@cuhk.edu.hk > Funding support: Research Data Management Development Fund, The Chinese University of Hong Kong (Project Number: 4730346). ALZHEIMER'S ASSOCIATION AAIC>26