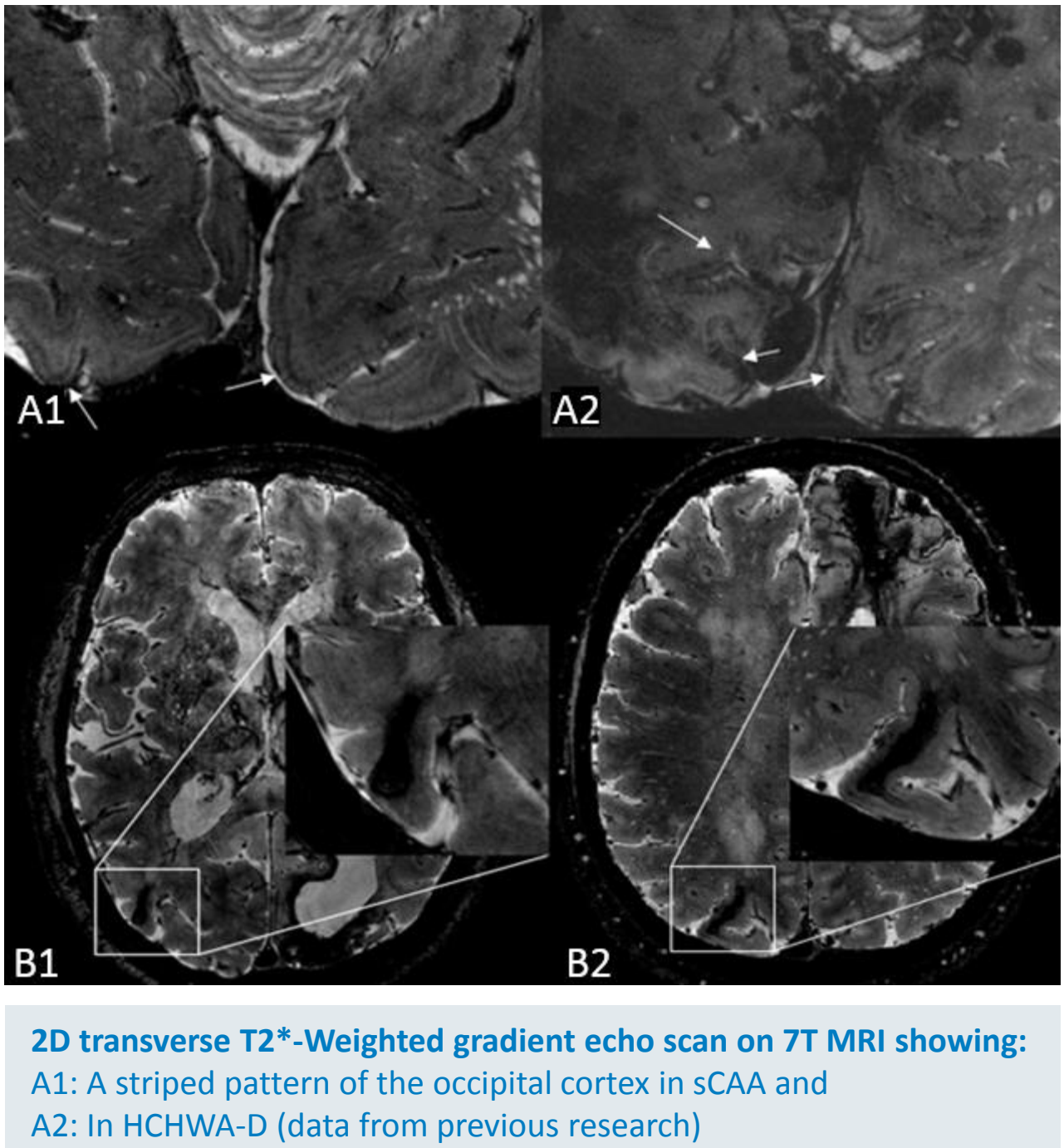
E.A. Koemans[1], S. Voigt[1], J. van der Grond[2], S. van Rooden[2], T.W. van Harten[2], M.J.P. van Osch[2], M.A. van Buchem[2], C.J.M. Klijn[3], E.W. van Zwet[4], G.M. Terwindt[1], M.A.A. van Walderveen[2], M.J.H. Wermer[1]

[1] Dept. of Neurology, Leiden University Medical Center
[2] Dept. of Radiology, Leiden University Medical Center
[3]Dept. of Neurology, Radboud University Medical Center
[4]Dept. of Biomedical Data sciences, Leiden University Medical Center

Innovative MRI markers for sporadic Cerebral Amyloid Angiopathy at 7 Tesla MRI: Striped occipital cortex and intragyral hemorrhage

Background

Recently, a striped pattern of the occipital cortex and intragyral hemorrhages were observed in respectively 40% and 47% of patients with symptomatic Hereditary Cerebral Hemorrhage With Amyloidosis Dutch type (HCHWA-D) at 7 Tesla MRI. We investigated the prevalence of these markers and clinical characteristics of participants with these markers in sporadic Cerebral Amyloid Angiopathy (sCAA).



2D transverse T2*-Weighted gradient echo scan on 7T MRI showing:
A1: A striped pattern of the occipital cortex in sCAA and
A2: In HCHWA-D (data from previous research)
B1: Intragyral hemorrhage in sCAA and
B2: In HCHWA-D (data from previous research)

Methods

We performed 7 Tesla MRI in patients with probable CAA according to the Boston criteria. Striped cortex (linear hypointense stripes perpendicular to the cortex) and intragyral hemorrhages (hemorrhage restricted to the subcortical white matter of one gyrus) were scored on T2*-weighted gradient echo scans by two independent observers.

Conclusions

Striped occipital cortex and intragyral hemorrhages are present in sCAA, although less frequent than in HCHWA-D.

Results

We included 34 sCAA patients (38% women, mean age 70 years). Twenty had suffered from a symptomatic intracerebral hemorrhage (ICH). A striping of the occipital cortex was found in 4 (12%) of sCAA patients, although in only 1 (3%) the pattern was as distinct as previously found in HCHWA-D (figure A1/2). Seven intragyral hemorrhages were found in 6 (18%) sCAA patients, of which 4 (12%) were restricted to one gyrus conform the criteria and 2 (6%) extended into the white matter beyond one gyrus (figure B1/2). The intragyral hemorrhages were located in the temporal (29%) and/or occipital (71%) lobe. Age, sex and number of symptomatic intracerebral hemorrhages did not differ between patients with or without markers. Both markers were associated with lower Montreal Cognitive Assessment scores (median score: 16 (SD 3.8) for patients with versus 26 (SD 4.3) for patients without striped occipital cortex and 21 (SD 5.8) for patients with versus 26 (SD 4.8) for patients without intragyral hemorrhage).

Contact
E.A. Koemans
E.A.Koemans@LUMC.NL

Funded by the dutch heart foundation
Hartstichting