underwent an extensive examination, including retinal photography and 3T cranial MRI. Retinal vascular parameters (caliber, tortuosity, fractal dimension) were assessed from fundus images using a semi-automated computer-based program. The presence and number of CMBs were assessed using the Brain Observer Microbleed Scale (BOMBS) on susceptibility weighted imaging sequences. Poisson regression models were constructed, adjusting for age, gender, smoking status, body mass index, mean arterial blood pressure, fasting blood glucose, blood cholesterol, and additionally for total white matter volume, total brain volume, presence of stroke and intracranial stenosis. **Results:** A total of 239 participants who had gradable fundus photographs and MRI scans were included in this analysis. CMB were present in 75 participants, of whom 48 had a single CMB and another 27 subjects had $\geq$2 CMBs. In the multivariate adjusted models, smaller arteriolar fractal dimensions (multi-variable adjusted rate ratio [RR] per standard deviation [SD] decrease: 1.42; 95% confidence interval: 1.17-1.74), increased arteriolar tortuosity (RR per SD increase: 1.26; 95% CI: 1.04-1.53), narrower retinal arteriolar caliber (RR per SD decrease: 1.55; 95% CI: 1.05-2.33) and wider venular caliber (RR per SD increase: 1.55; 95%CI: 1.05-2.33) were associated with increasing numbers of CMB on MRI. **Conclusions:** In this study we found that a sparser and a more tortuous microvascular network in the retina is related to presence of CMB on MRI, suggesting common pathophysiological mechanisms may underlie both retinal and cerebral microvascular pathology.

O5-04-06 LONGITUDINAL CHANGES IN WHITE MATTER DISEASE AND COGNITION IN SUBCORTICAL VASCULAR MILD COGNITIVE IMPAIRMENT

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Background: Increasing evidences suggest that a strong association exists between cerebrovascular disease (CVD) and Alzheimer's disease (AD). However, few studies have evaluated the relationship between CVD and AD pathologies in living human subjects, or their effects on cognition. We investigated a longitudinal data in subcortical vascular mild cognitive impairment (svMCI), a prodromal stage of subcortical vascular dementia. We aimed (1) to assess the significance of co-existing AD pathology which was measured by 11 C-Pittsburgh Compound-B (PiB)-PET at baseline, as a predictor of changes in CVD, measured as white matter hyperintensities (WMH) and lacunes, (2) to evaluate the relationship between baseline amyloid burden and CVD and changes in cognitive performance, (3) to determine whether longitudinal changes in CVD are associated with changes in cognition. **Methods:** We prospectively recruited 67 svMCI patients who were annually followed up with MRI and neuropsychological tests for 3.85 years. 32.8% of svMCI patients were determined to be PiB(+) which was defined as PiB retention ratio greater than 1.5. We performed mixed-effect-models after controlling possible confounders. **Results:** PiB-positivity in svMCI patients was not associated with increase in WMH volume or number of lacune. However, as compared to PiB(-) patients, PiB(+) svMCI patients had greater decline in Boston naming test ($p<0.001$), Seoul verbal learning test ($p=0.002$), Controlled oral word association test($p<0.001$), and clinical dementia rating scale sum of box (CDR-SOB) ($p<0.001$). Baseline WMH volume and number of lacune were not associated with rate of cognitive decline in any domain. There was no interactive effect of baseline PiB retention ratio and baseline CVD burden on cognitive decline. Greater increase in lacune was associated with rapid decline in digit span backward ($p=0.030$), Stroop color reading ($p<0.001$), and CDR-SOB ($p=0.045$). Greater increase in WMH was associated with rapid decline in Stroop color reading ($p=0.012$) and CDR-SOB ($p=0.047$). **Conclusions:** Our findings suggest that concomitant AD pathology is a strong predictor of subsequent cognitive decline in svMCI patients, but does not play a role in the progression of CVD burden. Progression of CVD results in rapid decline in frontal function, independent of amyloid burden. Thus amyloid and vascular pathway leading to cognitive decline, are probably independent.

ORAL SESSIONS: O5-05: PUBLIC HEALTH AND PSYCHOSOCIAL FOCUS: EPIDEMIOLOGY IV—PROTECTION AND RISK

O5-05-01 MIDLIFE PROBLEM DRINKING AND RISK OF COGNITIVE DECLINE AND DEMENTIA: AN 18-YEAR PROSPECTIVE COHORT STUDY

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Background: In the US, lifetime prevalence of problem drinking is increasing. Little is known about the long-term consequences of midlife problem drinking on risk of cognitive decline and incident dementia in later life. **Methods:** We used data on 6686 participants aged 51 through 61 in the Health and Retirement Study (HRS), a biennial, prospective, nationally representative study of older US adults. Participants were followed from 1992 baseline until 2010 or until death or drop-out (mean years of follow-up = 15.7 years, standard deviation 3.8). Problem drinking was identified using the three-item modified CAGE (i.e. omitting the question on "cutting down"), a widely used screening instrument, with problem drinking defined as a score $\geq$ 1. O outcomes were cognitive decline on the 35-item modified Telephone Interview for Cognitive Status (mTICS), and severe cognitive impairment indicative of incident all-cause dementia (mTICS score $\leq$8). Linear and logistic regression models were adjusted for age, gender, race, education, current smoking status, depressive symptoms, history of diabetes or hypertension, years of follow-up, and baseline cognitive functioning. **Results:** Problem drinking was reported by 16.7% of participants at baseline and was more common in men, younger participants, those with lower levels of education, and smokers. In fully adjusted models, problem drinking was significantly associated with cognitive decline (B = -0.42, 95% confidence interval [CI] 0.14 to 0.71), and a doubling of the odds of incident dementia (odds ratio = 2.03, 95% CI 1.10 to 3.68). **Conclusions:** Midlife problem drinking was associated with a substantially increased risk of cognitive decline and incident dementia in later life. The CAGE instrument, which is quick and straightforward to administer, may offer clinicians a practical way to identify and intervene in individuals at elevated risk of future adverse cognitive outcomes as a result of problem drinking.

O5-05-02 RISK AND PROTECTIVE FACTORS FOR DEMENTIA IN PEOPLE 85 AND OLDER

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Background: The size of the older population is increasing worldwide, and those 80 years and older comprise the fastest growing group. There are several established risk factors for Alzheimer's disease (AD), cognitive impairment (CI) and dementia from mid to late life. However, knowledge about such factors in people $\geq$85 years is limited. The present study aims to identify independent factors associated with risk of dementia incurred over a 5-year period. **Methods:** The Umeå85+/GERDA study, a population-based cohort study of those aged 85, 90 and 95+ years, was used. Baseline material was collected from 2000 through 2002. After 5 years of follow-up, it was possible to evaluate 212 participants. Of these, 71 developed dementia. **Results:** Presence of depression at baseline was associated with higher