**Supplemental Material**

**Day-to-Day Home Blood Pressure Variability Is Associated with Cerebral Small Vessel Disease Burden in a Memory Clinic Population**

****

**Supplementary Figure 1.** Venn diagram of the occurrence of combinations of total small vessel disease markers in our study population. Of the total sample of 82 participants, 64 participants had at least 1 marker and are included in this diagram. WMH, severe periventricular and moderate-severe deep white matter hyperintensities; CMB, presence of cerebral microbleed(s); ePVS, enlarged perivascular spaces in basal ganglia.

**Supplementary Table 1.** Imaging sequence parameters

|  |  |  |
| --- | --- | --- |
|  | Magnetom Prisma (3.0T) | Magnetom Avanto (1.5T) |
| Parameter | Sequence |  |  |  |  |  |  |  |  |
|  | FLAIR | T1-w | T2-w | SWI | GRE | FLAIR | T1-w | T2-w | SWI | GRE |
| Slices (no) | 28 | 192 | 28 | 52 | 26 | 48 | 176 | 48 | 48 | 48 |
| Slice thickness (mm) | 5 | 0.9 | 5 | 3 | 5 | 3 | 1.0 | 3 | 3 | 3 |
| Slice gap (mm) | 0.5 | 0.45 | 0.5 | 0.6 | 0.5 | 0.03 | 0.5 | 0.03 | 0.6 | 0.03 |
| FoV (mm) | 230 | 240 | 230 | 250 | 230 | 240 | 256 | 240 | 230 | 240 |
| TE (ms) | 87 | 2.32 | 92 | 20 | 19.8 | 114 | 2.97 | 114 | 40 | 25 |
| TR (ms) | 9000 | 2300 | 3500 | 27 | 650 | 9000 | 2000 | 3100 | 49 | 845 |
| TI (ms) | 2500 | 900 | - | - | - | 2500 | 1100 | - | - | - |
| Flip angle (°) | 150 | 8 | 120 | 15 | 20 | 150 | 15 | 120 | 15 | 20 |

**Supplementary Table 2.** Comparison of total cSVD score by MR scanner

|  |  |  |
| --- | --- | --- |
|  | 1.5 T scanner | 3.0 T scanner |
| cSVD=0 | 12 (24.0 %) | 6 (18.8 %) |
| cSVD=1 | 12 (24.0 %) | 8 (25.0 %) |
| cSVD=2 | 12 (24.0 %) | 9 (28.1 %) |
| cSVD=3/4 | 14 (28.0 %) | 9 (28.1 %) |
| Total | 50 | 32 |

cSVD, cerebral small vessel disease

**Supplementary Table 3.** Pairwise comparisons of univariate analyses for systolic and diastolic coefficient of variation by total small vessel disease score

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | cSVD 0 | cSVD 1 | cSVD 2 | cSVD 3/4 |
| cSVD 0 |  | -1.7 (0.7), 0.09 | -1.6 (0.7), 0.12 | -2.0 (0.7), 0.01 |
| cSVD 1 | -1.9 (0.9), 0.18 |  | 0.1 (0.6), 1.00 | -0.4 (0.6), 1.00 |
| cSVD 2 | -1.2 (0.9), 0.96 | 0.7 (0.8), 1.00 |  | -0.5 (0.6), 1.00 |
| cSVD 3/4 | -1.7 (0.8), 0.25 | 0.2 (0.8), 1.00 | -0.5 (0.8), 1.00 |  |

Results are presented as mean difference (standard error), p-value. p-value is based on pairwise comparisons with Bonferroni correction. Results in grey present systolic CV and results in white present diastolic CV. CV, coefficient of variation; cSVD, cerebral small vessel disease.

**Supplementary Table 4.** Association of presence of total small vessel disease with mean and coefficient of variation of home blood pressure

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Predictor | Model 1 |  | Model 2 |  | Model 3 |  |
|  | OR (95% CI) | *p* | OR (95% CI) | *p* | OR (95% CI) | *p* |
| Systolic mean | 1.84 (1.09-3.11) | 0.022 | 1.99 (1.10-3.61) | 0.022 | - | - |
| Systolic CV | 1.71 (1.10-2.66) | 0.018 | 2.51 (1.21-5.18) | 0.013 | 2.37 (1.13-4.98) | 0.023 |
| Diastolic mean | 1.71 (1.07-2.75) | 0.026 | 1.63 (1.01-2.63) | 0.046 | - | - |
| Diastolic CV | 1.47 (1.04-2.07) | 0.028 | 1.48 (1.03-2.13) | 0.036 | 1.48 (1.02-2.15) | 0.042 |

Results from logistic regression comparing presence (cSVD score 1-4) versus absence (cSVD score 0). Model 1: adjusted for age and sex. Model 2: model 1 + current smoking, diabetes and cardiovascular history. Model 3: model 2 + mean BP (systolic or diastolic). For mean BP, the OR is presented per 10 (systolic) or 5 (diastolic) mmHg increase. OR, odds ratio; CI, confidence interval; CV, coefficient of variation.

**Supplementary Table 5.** Association of individual markers of small vessel disease with mean and coefficient of variation of systolic home blood pressure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Outcome | Predictor | Model 1 | Model 2 | Model 3 |
|  |  | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| WMH | Systolic mean | 1.71 (0.99-2.92) | 1.68 (0.88-3.19) | - |
|  | Systolic CV | 1.79 (1.09-2.92) | 2.44 (1.12-5.35) | 2.43 (1.09-5.42) |
|  | Diastolic mean | 1.63 (0.96-2.75) | 1.44 (0.82-2.55) | - |
|  | Diastolic CV | 1.70 (1.08-2.66) | 1.58 (0.99-2.53) | 1.67 (0.99-2.80) |
| CMB | Systolic mean | 1.66 (0.95-2.89) | 1.69 (0.91-3.11) | - |
|  | Systolic CV | 2.06 (1.13-3.78) | 2.35 (1.11-4.94) | 2.31 (1.08-4.95) |
|  | Diastolic mean | 1.52 (0.99-2.60) | 1.50 (0.85-2.63) | - |
|  | Diastolic CV | 1.74 (1.12-2.71) | 1.83 (1.09-3.09) | 1.78 (1.07-2.97) |
| Lacune | Systolic mean | 1.49 (0.86-2.59) | 1.24 (0.65-2.39) | - |
|  | Systolic CV | 2.30 (1.31-4.66) | 2.23 (1.00-4.94) | 2.11 (0.89-4.99) |
|  | Diastolic mean | 1.59 (0.89-2.83) | 1.50 (0.80-2.80) | - |
|  | Diastolic CV | 1.54 (0.99-2.40) | 1.52 (0.91-2.52) | 1.57 (0.90-2.75) |
| ePVS | Systolic mean | 1.76 (1.03-3.00) | 1.72 (0.94-3.16) | - |
|  | Systolic CV | 1.60 (0.99-2.56) | 2.50 (1.10-5.67) | 2.36 (1.04-5.32) |
|  | Diastolic mean | 1.67 (1.02-2.74) | 1.55 (0.93-2.57) | - |
|  | Diastolic CV | 1.51 (1.03-2.21) | 1.84 (1.05-3.23) | 2.19 (1.16-4.13) |

Results from binary logistic regression. Comparison is made between participants with a certain marker (alone or in combination) and participants with no markers (n=18). Model 1: adjusted for age and sex. Model 2: model 1 + current smoking, diabetes, antihypertensive medication, cardiovascular history and BMI. Model 3: model 2 + mean BP (systolic or diastolic). For mean BP, the OR is presented per 10 (systolic) or 5 (diastolic) mmHg increase. OR, odds ratio; CI, confidence interval; CV, coefficient of variation.