**Table S1.** Correlation and comparison between ultrasound measurements in the entire cohort.

|  |  |  |
| --- | --- | --- |
| **Total cohort (n=36)** | **Correlation** | **P-value** |
| **CSA tibial nerve left –**  **CSA tibial nerve right** | 0.912  **(<0.001)\*\*** | Z=-1.440  p=0.150 |
| **Microvascular blood flow left –**  **Microvascular blood flow right** | 0.540  **(<0.001)\*\*** | Z=-1.645  p=0.100 |
| **CSA tibial nerves –**  **Microvascular blood flow** | 0.375  **(0.024)\*\*** | --- |

Data presented as Spearman’s rank correlation coefficient (rho) (p-value), \*\*p-value considered significant after Bonferroni adjustment (ie, p ≤ 0.05 / 2 = 0.025). CSA, Cross sectional area.

**Table S2.** Correlation and comparison between nerve conduction study – tibial nerve.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **CIDP (n=5)** | | **CMT (n=5)** | |
| **Correlation** | **P-value** | **Correlation** | **P-value** |
| **CMAP ankle left–**  **CMAP ankle right** | 1.000  **(<0.001)\*\*** | Z=-1.604  P=0.109 | 0.900  (0.037) | Z=-0.944  P=0.354 |
| **CMAP popliteal fossa left –**  **CMAP popliteal fossa right** | 1.000  **(<0.001)\*\*** | Z=-1.633  P=0.102 | -0.700  (0.188) | Z=-0.135  P=0.893 |
| **NCV left –**  **NCV right** | 0.959\*  **(0.010)\*\*** | T(4)=0.482  P=0.655 | -0.981\*  **(0.003)\*\*** | T(4)=-0.110  P=0.917 |
| **CMAP ankle –**  **CMAP popliteal fossa** | 0.973  **(0.005)\*\*** | Z=-1.604  P=0.109 | 1.000  **(<0.001)\*\*** | Z=-2.023  P=0.043 |

Data presented as Spearman‘s rank correlation coefficient (rho) (p-value), \*Pearson correlation coefficient (r) (p-value), \*\*p-value considered significant after Bonferroni adjustment (ie, p ≤ 0.05 / 4 = 0.0125); CIDP, Chronic inflammatory demyelinating polyradiculopathy; CMT, Charcot-Marie-Tooth disease; CMAP, compound muscle action potential; NCV, nerve conduction velocity.



**Figure S1.** Box plots ALS – Blood-nerve barrier leakage.

Median (horizontal bars), 25th to 75th quartile (box), range (whiskers) and single values (dots) are shown, CSA, Cross-sectional area; CSF, cerebral spinal fluid; ns, not significant.

**Table S3.** Subgroup comparison clinical scores – ALS.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ALS (n=11)** | **ALSFRS/R total** | | | **ALSFRS/R gross-motor** | | | |
| **severe**  **(n=8)** | **mild**  **(n=3)** | **p-value** | | **severe**  **(n=6)** | **mild**  **(n=5)** | **p-value** |
| **CSA**  **(mm²)** | 11.26±2.82  12.24  (5.82-13.81) | 13.20±3.51  1.97  (9.16-15.47) | T(9)=-0.958;  p=0.363 | | 11.11±3.11  12.24  (5.82-13.81) | 12.61±2.91  13.21  (8.52-15.47) | T(9)=-0.821;  p=0.433 |
| **Microvascular blood flow** | 0.076±0.112  0.020  (0.00-0.30) | 0.265±0.110  0.220  (0.19-0.39) | U=3.000;  Z=-1.858;  p=0.085 | | 0.080±0.093  0.045  (0.00-0.21) | 0.185±0.171  0.220  (0.00-0.39) | T(9)=-1.301;  p=0.226 |

Data presented as mean ± standard deviation, median (range). p-value considered significant after Bonferroni adjustment (ie, p ≤ 0.05 / 4 = 0.0125). ALS, Amyotrophic lateral sclerosis; CSA, Cross sectional area; ALSFRS/R, ALS-Functional Rating Scale/revised.

**Table S4.** Subgroup comparison clinical scores – CIDP.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CIDP (n=5)** | **ONLS total** | | | **ONLS leg grade scale** | | | |
| **severe**  **(n=2)** | **mild**  **(n=3)** | **p-value** | | **severe**  **(n=2)** | **mild**  **(n=3)** | **p-value** |
| **CSA**  **(mm²)** | 27.50±7.85  27.50  (21.95-33.05) | 16.62±6.01  19.67  (9.69-20.49) | T(3)=-1.785;  p=0.172 | | 16.62±6.01  19.67  (9.69-20.49) | 27.50±7.85  27.50  (21.95-33.05) | T(3)=-1.785;  p=0.172 |
| **Microvascular blood flow** | 0.530±0.750  0.530  (0.00-1.06) | 0.522±0.086  0.505  (0.45-0.62) | T(3)=-0.021;  p=0.985 | | 0.530±0.750  0.530  (0.00-1.06) | 0.522±0.086  0.505  (0.45-0.62) | T(3)=-0.021;  p=0.985 |
| **CIDP (n=5)** | **MRC-sum-score** | | | **MRC leg** | | | |
| **severe**  **(n=2)** | **mild**  **(n=3)** | **p-value** | | **severe**  **(n=2)** | **mild**  **(n=3)** | **p-value** |
| **CSA**  **(mm²)** | 27.50±7.85  27.50  (21.95-33.05) | 16.62±6.01  19.67  (9.69-20.49) | T(3)=-1.785;  p=0.172 | | 27.50±7.85  27.50  (21.95-33.05) | 16.62±6.01  19.67  (9.69-20.49) | T(3)=-1.785;  p=0.172 |
| **Microvascular blood flow** | 0.530±0.750  0.530  (0.00-1.06) | 0.522±0.086  0.505  (0.45-0.62) | T(3)=-0.021;  p=0.985 | | 0.530±0.750  0.530  (0.00-1.06) | 0.522±0.086  0.505  (0.45-0.62) | T(3)=-0.021;  p=0.985 |

Data presented as mean ± standard deviation, median (range). p-value considered significant after Bonferroni adjustment (ie, p ≤ 0.05 / 8 = 0.00625). CIDP, Chronic inflammatory demyelinating polyradiculopathy; CSA, Cross sectional area; ONLS, Overall neuropathy limitation scale; MRC, Medical research council.

**Table S5.** Subgroup comparison clinical scores – CMT.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CMT (n=5)** | **CMTNS total** | | | **CMTNS leg** | | | |
| **severe**  **(n=2)** | **mild**  **(n=3)** | **p-value** | | **severe**  **(n=2)** | **mild**  **(n=3)** | **p-value** |
| **CSA**  **(mm²)** | 24.26±4.62  24.26  (20.99-27.52) | 23.07±4.65  25.23  (17.73-26.26) | T(3)=-0.279;  p=0.798 | | 22.63±6.92  22.63  (17.73-27.52) | 24.16±2.79  25.23  (20.99-26.26) | T(3)=0.365;  p=0.739 |
| **Microvascular blood flow** | 0.190±0.053  0.190  (0.15-0.23) | 0.210±0.317  0.055  (0.00-0.57) | T(3)=0.094;  p=0.931 | | 0.103±0.067  0.103  (0.06-0.15) | 0.267±0.290  0.225  (0.00-0.57) | T(3)=0.750;  p=0.508 |
| **CMT (n=5)** | **MRC-sum-score** | | | **MRC leg** | | | |
| **severe**  **(n=3)** | **mild**  **(n=2)** | **p-value** | | **severe**  **(n=3)** | **mild**  **(n=2)** | **p-value** |
| **CSA**  **(mm²)** | 22.08±4.99  20.99  (17.73-27.52) | 25.74±0.72  25.74  (25.23-26.26) | T(3)=-0.981;  p=0.399 | | 23.84±5.32  26.26  (17.73-27.52) | 23.11±3.00  23.11  (20.99-25.23) | T(3)=0.170;  p=0.876 |
| **Microvascular blood flow** | 0.143±0.085  0.150  (0.06-0.23) | 0.288±0.407  0.288  (0.00-0.57) | T(3)=-0.645;  p=0.565 | | 0.260±0.277  0.150  (0.06-0.57) | 0.113±0.159  0.113  (0.00-0.23) | T(3)=0.662;  p=0.555 |

Data presented as mean ± standard deviation, median (range). p-value considered significant after Bonferroni adjustment (ie, p ≤ 0.05 / 8 = 0.00625). CMT, Charcot-Marie-Tooth disease; CSA, Cross sectional area; CMTNS, CMT-neuropathy score; MRC, Medical research council.