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| **Supplementary Table 2. Group differences of genotypes in the non-demented cohort and subgroups.** |
| 　 | 　 | **non-demented elders (n = 90)** |  | **MCI (n = 49)** |  | **CN (n = 41)** |
| 　 | **GG** | **AG** | **AA** | **p value** |  | **GG** | **AG** | **AA** | **p value** |  | **GG** | **AG** | **AA** | **p value** |
| CSF t-tau |  | 68.600  | 67.300  | 63.400  | 0.953  |  | 73.150  | 68.400  | 78.650  | 0.722  |  | 66.900  | 66.200  | 65.700  | 0.772  |
| CSF p-tau |  | 37.750  | 38.250  | 34.100  | 0.631  |  | 41.000  | 32.700  | 43.150  | 0.531  |  | 37.750  | 37.300  | 31.700  | 0.290  |
| Left hippocampus |  | 1.190  | 1.285  | 1.392  | **0.004**  |  | 1.166  | 1.261  | 1.598  | **0.015**  |  | 1.193  | 1.310  | 1.425  | 0.172  |
| Right hippocampus |  | 1.165  | 1.246  | 1.432  | **0.009**  |  | 1.146  | 1.252  | 1.620  | **0.011**  |  | 1.173  | 1.254  | 1.464  | 0.330  |
| Left entorhinal |  | 1.416  | 1.553  | 1.698  | **0.007**  |  | 1.416  | 1.677  | 2.253  | **0.047**  |  | 1.264  | 1.436  | 1.765  | 0.093  |
| Right entorhinal |  | 1.333  | 1.634  | 1.585  | 0.096  |  | 1.381  | 1.644  | 1.880  | 0.463  |  | 1.263  | 1.463  | 1.656  | 0.103  |
| Left parahippocampus |  | 1.083  | 1.319  | 1.377  | **0.004**  |  | 1.128  | 1.324  | 1.492  | 0.061  |  | 1.045  | 1.115  | 1.351  | **0.038**  |
| Right parahippocampus |  | 1.136  | 1.283  | 1.401  | **0.013**  |  | 1.154  | 1.287  | 1.612  | 0.094  |  | 1.118  | 1.269  | 1.452  | 0.095  |
| Left pallidum |  | 1.912  | 1.884  | 1.826  | 0.932  |  | 1.943  | 1.881  | 1.814  | 0.720  |  | 1.916  | 1.888  | 1.838  | 0.996  |
| Right pallidum |  | 1.848  | 1.745  | 1.855  | 0.422  |  | 1.836  | 1.753  | 1.839  | 0.707  |  | 1.848  | 1.653  | 1.876  | 0.269  |
| Left caudate |  | 1.361  | 1.412  | 1.382  | 0.785  |  | 1.323  | 1.406  | 1.365  | 0.553  |  | 1.395  | 1.381  | 1.423  | 0.995  |
| Right caudate |  | 1.366  | 1.392  | 1.576  | 0.064  |  | 1.306  | 1.301  | 1.600  | **0.023**  |  | 1.426  | 1.372  | 1.549  | 0.846  |
| Left putamen |  | 1.447  | 1.449  | 1.467  | 0.593  |  | 1.438  | 1.428  | 1.503  | 0.333  |  | 1.453  | 1.441  | 1.503  | 0.955  |
| Right putamen |  | 1.535  | 1.498  | 1.555  | 0.658  |  | 1.490  | 1.469  | 1.584  | 0.329  |  | 1.592  | 1.504  | 1.625  | 0.989  |
| Left thalamus |  | 0.964  | 0.980  | 0.972  | 0.265  |  | 0.964  | 1.000  | 0.940  | 0.548  |  | 0.976  | 0.962  | 1.014  | 0.463  |
| Right thalamus |  | 1.168  | 1.125  | 1.160  | 0.499  |  | 1.185  | 1.125  | 1.170  | 0.458  |  | 1.167  | 1.133  | 1.155  | 0.953  |
| Brainstem |  | 1.157  | 1.098  | 1.165  | 0.091  |  | 1.163  | 1.061  | 1.189  | 0.102  |  | 1.165  | 1.096  | 1.184  | 0.694  |
| Left superior temporal cortex |  | 1.160  | 1.229  | 1.341  | **0.004**  |  | 1.139  | 1.218  | 1.338  | **0.005**  |  | 1.191  | 1.230  | 1.355  | 0.386  |
| Right superior temporal cortex |  | 1.200  | 1.192  | 1.362  | **0.046**  |  | 1.210  | 1.187  | 1.490  | **0.013**  |  | 1.212  | 1.247  | 1.334  | 0.689  |
| Left inferior temporal cortex |  | 1.449  | 1.565  | 1.655  | **0.012**  |  | 1.465  | 1.541  | 1.720  | 0.094  |  | 1.449  | 1.548  | 1.597  | 0.115  |
| Right inferior temporal cortex |  | 1.455  | 1.508  | 1.643  | **0.032**  |  | 1.462  | 1.501  | 1.892  | 0.068  |  | 1.423  | 1.515  | 1.638  | 0.193  |
| Left lateral occipital cortex |  | 1.344  | 1.366  | 1.441  | 0.164  |  | 1.385  | 1.412  | 1.452  | 0.469  |  | 1.301  | 1.298  | 1.487  | 0.335  |
| Right lateral occipital cortex |  | 1.313  | 1.365  | 1.480  | **0.042**  |  | 1.344  | 1.377  | 1.643  | 0.109  |  | 1.289  | 1.301  | 1.537  | 0.174  |
| Left inferior parietal cortex |  | 1.325  | 1.394  | 1.415  | 0.103  |  | 1.410  | 1.373  | 1.440  | 0.284  |  | 1.295  | 1.338  | 1.439  | 0.223  |
| Right inferior parietal cortex |  | 1.316  | 1.368  | 1.493  | **0.036**  |  | 1.351  | 1.302  | 1.607  | 0.064  |  | 1.298  | 1.365  | 1.525  | 0.196  |
| Left superior frontal cortex |  | 1.059  | 1.101  | 1.138  | **0.049**  |  | 1.076  | 1.108  | 1.161  | 0.120  |  | 1.045  | 1.084  | 1.136  | 0.218  |
| Right superior frontal cortex | 　 | 1.091  | 1.111  | 1.183  | 0.070  | 　 | 1.097  | 1.111  | 1.247  | 0.056  | 　 | 1.097  | 1.100  | 1.154  | 0.402  |

**(continued table)**

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|  | **Aβ-positive participants (n = 35)** |  | **Aβ-negative participants (n = 53)** |  | ***APOE ε*4 carriers (n = 29)** |  | ***APOE ε*4 non-carriers (n = 61)** |
| **GG** | **AG** | **AA** | **p value** |  | **GG** | **AG** | **AA** | **p value** |  | **GG** | **AG** | **AA** | **p value** |  | **GG** | **AG** | **AA** | **p value** |
| CSF t-tau | 101.800  | 66.200  | 101.200  | 0.897  |  | 62.800  | 68.500  | 57.000  | 0.896  |  | 66.200  | 65.000  | 60.200  | 0.856  |  | 69.600  | 73.000  | 74.400  | 0.755  |
| CSF p-tau | 46.800  | 39.200  | 52.500  | 0.653  |  | 30.700  | 37.300  | 28.500  | 0.565  |  | 29.900  | 27.600  | 36.150  | 0.619  |  | 39.400  | 39.800  | 34.100  | 0.618  |
| Left hippocampus | 1.213  | 1.322  | 1.754  | **0.008**  |  | 1.154  | 1.191  | 1.258  | 0.068  |  | 1.230  | 1.442  | 1.447  | 0.716  |  | 1.137  | 1.202  | 1.392  | **0.002**  |
| Right hippocampus | 1.241  | 1.299  | 1.788  | **0.005**  |  | 1.159  | 1.167  | 1.189  | 0.151  |  | 1.138  | 1.336  | 1.450  | 0.677  |  | 1.165  | 1.174  | 1.432  | **0.004**  |
| Left entorhinal | 1.596  | 1.782  | 2.432  | **0.015**  |  | 1.222  | 1.360  | 1.431  | **0.026**  |  | 1.496  | 1.782  | 1.861  | 0.379  |  | 1.266  | 1.509  | 1.698  | **0.017**  |
| Right entorhinal | 1.694  | 1.753  | 1.918  | 0.518  |  | 1.243  | 1.367  | 1.414  | 0.098  |  | 1.491  | 1.753  | 1.597  | 0.654  |  | 1.304  | 1.463  | 1.585  | 0.181  |
| Left parahippocampus | 1.266  | 1.496  | 2.021  | 0.071  |  | 1.057  | 1.146  | 1.258  | **0.026**  |  | 1.121  | 1.391  | 1.390  | 0.515  |  | 1.073  | 1.229  | 1.377  | **0.006**  |
| Right parahippocampus | 1.229  | 1.379  | 1.890  | **0.044**  |  | 1.099  | 1.154  | 1.152  | 0.114  |  | 1.234  | 1.379  | 1.449  | 0.586  |  | 1.129  | 1.247  | 1.401  | **0.009**  |
| Left pallidum | 1.855  | 1.888  | 1.900  | 0.627  |  | 1.947  | 1.872  | 1.826  | 0.814  |  | 1.916  | 2.116  | 1.676  | 0.097  |  | 1.907  | 1.833  | 1.900  | 0.355  |
| Right pallidum | 1.847  | 1.741  | 1.876  | 0.334  |  | 1.854  | 1.753  | 1.764  | 0.529  |  | 1.770  | 1.999  | 1.655  | 0.667  |  | 1.878  | 1.741  | 1.886  | 0.073  |
| Left caudate | 1.329  | 1.395  | 1.392  | 0.973  |  | 1.387  | 1.418  | 1.382  | 0.969  |  | 1.337  | 1.418  | 1.242  | 0.433  |  | 1.385  | 1.406  | 1.409  | 0.508  |
| Right caudate | 1.370  | 1.240  | 1.769  | **0.035**  |  | 1.366  | 1.412  | 1.427  | 0.440  |  | 1.337  | 1.457  | 1.515  | 0.336  |  | 1.382  | 1.301  | 1.576  | 0.080  |
| Left putamen | 1.508  | 1.451  | 1.858  | 0.089  |  | 1.440  | 1.446  | 1.372  | 0.875  |  | 1.422  | 1.611  | 1.419  | 0.801  |  | 1.465  | 1.446  | 1.539  | 0.404  |
| Right putamen | 1.614  | 1.528  | 1.923  | 0.114  |  | 1.508  | 1.455  | 1.422  | 0.966  |  | 1.500  | 1.688  | 1.512  | 0.771  |  | 1.580  | 1.455  | 1.555  | 0.429  |
| Left thalamus | 0.914  | 0.962  | 0.985  | 0.472  |  | 0.970  | 1.000  | 0.972  | 0.740  |  | 0.984  | 1.024  | 0.895  | 0.314  |  | 0.960  | 0.944  | 1.049  | **0.040**  |
| Right thalamus | 1.116  | 1.105  | 1.184  | 0.917  |  | 1.177  | 1.126  | 1.160  | 0.317  |  | 1.184  | 1.215  | 1.038  | 0.560  |  | 1.166  | 1.097  | 1.183  | 0.081  |
| Brainstem | 1.176  | 1.061  | 1.245  | 0.101  |  | 1.157  | 1.117  | 1.158  | 0.639  |  | 1.200  | 1.162  | 1.080  | 0.893  |  | 1.151  | 1.061  | 1.203  | **0.025**  |
| Left superior temporal cortex | 1.228  | 1.288  | 1.401  | 0.097  |  | 1.153  | 1.211  | 1.315  | **0.026**  |  | 1.169  | 1.288  | 1.263  | 0.419  |  | 1.158  | 1.218  | 1.341  | **0.006**  |
| Right superior temporal cortex | 1.194  | 1.204  | 1.701  | **0.017**  |  | 1.210  | 1.187  | 1.330  | 0.555  |  | 1.234  | 1.295  | 1.426  | 0.584  |  | 1.195  | 1.190  | 1.362  | **0.049**  |
| Left inferior temporal cortex | 1.500  | 1.583  | 1.794  | 0.124  |  | 1.423  | 1.541  | 1.489  | 0.071  |  | 1.481  | 1.663  | 1.597  | 0.350  |  | 1.443  | 1.541  | 1.655  | **0.036**  |
| Right inferior temporal cortex | 1.491  | 1.515  | 2.184  | 0.050  |  | 1.415  | 1.477  | 1.474  | 0.159  |  | 1.481  | 1.808  | 1.744  | 0.440  |  | 1.443  | 1.477  | 1.643  | 0.061  |
| Left lateral occipital cortex | 1.382  | 1.387  | 1.509  | 0.935  |  | 1.214  | 1.346  | 1.415  | 0.071  |  | 1.414  | 1.793  | 1.356  | 0.699  |  | 1.315  | 1.331  | 1.441  | 0.155  |
| Right lateral occipital cortex | 1.344  | 1.382  | 1.771  | 0.055  |  | 1.297  | 1.352  | 1.450  | 0.178  |  | 1.355  | 1.493  | 1.586  | 0.307  |  | 1.294  | 1.305  | 1.469  | 0.118  |
| Left inferior parietal cortex | 1.351  | 1.599  | 1.490  | 0.500  |  | 1.314  | 1.327  | 1.412  | 0.271  |  | 1.386  | 1.730  | 1.391  | 0.681  |  | 1.322  | 1.327  | 1.415  | 0.167  |
| Right inferior parietal cortex | 1.346  | 1.420  | 1.754  | 0.063  |  | 1.294  | 1.268  | 1.365  | 0.303  |  | 1.354  | 1.488  | 1.574  | 0.352  |  | 1.302  | 1.302  | 1.493  | 0.095  |
| Left superior frontal cortex | 1.059  | 1.173  | 1.217  | 0.437  |  | 1.064  | 1.019  | 1.134  | 0.192  |  | 1.071  | 1.173  | 1.120  | 0.554  |  | 1.048  | 1.087  | 1.138  | 0.076  |
| Right superior frontal cortex | 1.143  | 1.112  | 1.274  | 0.353  | 　 | 1.087  | 1.111  | 1.150  | 0.196  | 　 | 1.134  | 1.145  | 1.156  | 0.929  | 　 | 1.083  | 1.090  | 1.183  | **0.044**  |