**Supplementary Table 1**. Demographic, clinical, pathological correlates, and vascular risk factors of neuropathologically diagnosed AD patients using the NIA-Reagan criteria

|  |  |
| --- | --- |
| Variable | **Psychosis status** |
| npAD-P | npAD+P |  |
| *n* = 462 | *n* =  | npAD+D | npAD+H | npAD+DH |
|  | *N /* mean | % / SD | *N /* mean | % / SD | *n* = 149 | *n* =  | *n* =  |
| *N /* mean | % / SD | *N /* mean | % / SD | *N /* mean | % / SD |
| Age of death  | 80.07 | 10.19 | 78.70\* | 10.45 | 79.21 | 10.55 | 77.98 | 10.38 | 78.41 | 10.39 |
| Male  | 267 | 57.8% | 164 | 56.2% | 81 | 54.4% | 32 | 55.2% | 52 | 60.5% |
| Education (years) | 15.26 | 3.15 | 14.89 | 3.16 | 15.11 | 3.01 | 14.86 | 2.84 | 14.57 | 3.62 |
| Disease duration (years)  | 9.95 | 3.81 | 10.08 | 4.20 | 10.24 | 4.32 | 9.72 | 4.34 | 10.09 | 3.94 |
| CDR  |  |  |  |  | \* |  | \* |  |  |  |
|  | Severe impairment | 215 | 46.5% | 126 | 43.2% | 44 | 29.5% | 37 | 63.8% | 45 | 52.3% |
|  | Moderate impairment | 140 | 30.3% | 113 | 38.7% | 65 | 43.6% | 17 | 29.3% | 32 | 37.2% |
|  | Mild impairment  | 85 | 18.4% | 46 | 15.8% | 35 | 23.5% | 2 | 3.4% | 9 | 10.5% |
|  | Questionable impairment  | 22 | 4.8% | 7 | 2.4% | 5 | 3.4% | 2 | 3.4% | 0 | 0.0% |
|  | No impairment  | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| MMSE | 12.47 | 8.16 | 12.33 | 7.17 | 14.20\* | 6.91 | 9.38\* | 7.32 | 10.17\* | 6.47 |
| FAQ | 27.15 | 5.11 | 28.05 | 3.62 | 27.02 | 4.41 | 29.04\* | 2.53 | 28.89\* | 2.29 |
| Braak Stage  |  |  |  |  |  |  |  |  |  |  |
|  | 6 | 295 | 63.9% | 187 | 64.0% | 98 | 65.8% | 35 | 60.3% | 55 | 64.0% |
|  | 5 | 150 | 32.5% | 99 | 33.9% | 47 | 31.5% | 22 | 37.9% | 30 | 34.9% |
|  | 4 | 15 | 3.2% | 3 | 1.0% | 1 | 0.7% | 1 | 1.7% | 1 | 1.2% |
|  | 3 | 1 | 0.2% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
|  | 2 | 0 | 0.0% | 1 | 0.3% | 1 | 0.7% | 0 | 0.0% | 0 | 0.0% |
|  | 1 | 0 | 0.0% | 1 | 0.3% | 1 | 0.7% | 0 | 0.0% | 0 | 0.0% |
|  | Criteria not met | 1 | 0.2% | 1 | 0.3% | 1 | 0.7% | 0 | 0.0% | 0 | 0.0% |
| CERAD |  |  |  |  |  |  |  |  |  |  |
|  | Definite AD | 412 | 93.6% | 252 | 96.6% | 131 | 97.0% | 49 | 94.2% | 73 | 97.3% |
|  | Probable AD | 28 | 6.4% | 8 | 3.1% | 3 | 2.2% | 3 | 5.8% | 2 | 2.7% |
|  | Possible AD | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
|  | Criteria not met  | 0 | 0.0% | 1 | 0.4% | 1 | 0.7% | 0 | 0.0% | 0 | 0.0% |
| Neuritic Plaques |  |  |  |  |  |  |  |  |  |  |
|  | Frequent | 401 | 86.8% | 254 | 87.0% | 129 | 86.6% | 48 | 82.8% | 78 | 90.7% |
|  | Moderate | 58 | 12.6% | 36 | 12.3% | 18 | 12.1% | 10 | 17.2% | 8 | 9.3% |
|  | Sparse | 3 | 0.6% | 1 | 0.3% | 1 | 0.7% | 0 | 0.0% | 0 | 0.0% |
|  | None  | 0 | 0.0% | 1 | 0.3% | 1 | 0.7% | 0 | 0.0% | 0 | 0.0% |
| Lewy Bodies |  |  | \* |  | \* |  | \* |  | \* |  |
|  | Diffuse neocortical  | 51 | 12.4% | 58 | 22.5% | 26 | 18.8% | 15 | 28.8% | 17 | 24.6% |
|  | Limbic transitional  | 47 | 11.4% | 36 | 14.0% | 22 | 15.9% | 4 | 7.7% | 10 | 14.5% |
|  | Brainstem type  | 11 | 2.7% | 12 | 4.7% | 7 | 5.1% | 2 | 3.8% | 3 | 4.3% |
|  | No LB  | 302 | 73.5% | 152 | 58.9% | 83 | 60.1% | 31 | 59.6% | 39 | 56.5% |
| Subcortical Arteriosclerotic Leukoencephalopathy |  |  | \* |  |  |  |  |  | \* |  |
|  | Yes | 58 | 12.6% | 62 | 21.3% | 121 | 81.8% | 47 | 81.0% | 62 | 72.1% |
|  | No  | 401 | 87.4% | 229 | 78.7% | 12 | 20.3% | 3 | 15.8% | 10 | 26.3% |
| Smoker |  |  |  |  |  |  |  |  |  |  |
|  | No | 251 | 57.0% | 160 | 55.4% | 81 | 54.7% | 35 | 61.4% | 45 | 52.9% |
|  | Yes | 189 | 43.0% | 129 | 44.6% | 67 | 45.3% | 22 | 38.6 | 40 | 47.1% |
| Total years smoked | 25.04 | 17.69 | 27.27 | 16.85 | 26.94 | 16.53 | 26.17 | 17.75 | 28.51 | 17.24 |
| Packs/day  |  |  |  |  |  |  |  |  |  |  |
|  | 1 cig - < 1/2 pack | 52 | 28.4% | 25 | 21.6% | 12 | 20.3% | 3 | 15.8% | 10 | 26.3% |
|  | 1/2 - <1 pack | 67 | 36.6% | 47 | 40.5% | 25 | 42.4% | 5 | 26.3% | 17 | 44.7% |
|  | 1 - <1 1/2 pack | 42 | 23.0% | 29 | 25.0% | 16 | 27.1% | 6 | 31.6% | 7 | 18.4% |
|  | 1 1/2 - < 2 packs | 8 | 4.4% | 7 | 6.0% | 4 | 6.8% | 1 | 5.3% | 2 | 5.3% |
|  | ≥2 packs | 14 | 7.7% | 8 | 6.9% | 2 | 3.4% | 4 | 21.1% | 2 | 5.3% |
| Age quit smoking | 45.81 | 15.84 | 52.23\* | 47.03 | 53.81 | 64.38 | 54.55\* | 18.48 | 48.17 | 15.21 |
| Hypertension |  |  | \* |  |  |  |  |  |  |  |
|  | Absent  | 260 | 59.1% | 143 | 50.2% | 73 | 50.0% | 30 | 54.5% | 41 | 48.2% |
|  | Active | 180 | 40.9% | 142 | 49.8% | 73 | 50.0% | 25 | 45.5% | 44 | 51.8% |
| Hypercholesterolemia  |  |  | \* |  |  |  |  |  |  |  |
|  | Absent  | 273 | 62.0% | 148 | 52.6% | 79 | 55.2% | 28 | 54.9% | 42 | 50.6% |
|  | Active | 167 | 38.0% | 128 | 46.4% | 64 | 44.8% | 23 | 45.1% | 41 | 49.4% |
| Diabetes |  |  |  |  |  |  |  |  |  |  |
|  | Absent  | 421 | 91.5% | 253 | 87.5% | 128 | 87.7% | 53 | 91.4% | 73 | 84.9% |
|  | Active | 39 | 8.5% | 36 | 12.5% | 18 | 12.3% | 5 | 8.6% | 13 | 15.1% |

**Supplementary Table 2.** Test statistics for significant variables comparing neuropathologically diagnosed AD patients with and without psychosis using NIA-Reagan criteria. Gray boxes represent non-significant results

|  |  |
| --- | --- |
| **Variable** | **Psychosis status** |
| npAD+P |  |
| npAD+D | npAD+H | npAD+DH |
| **Global CDR** |  | OR=0.623, 95% CI, -.813 to -.133, Wald χ2 (1)=7.441,  *p* = 0.006 | OR=2.188, 95% CI, .227 to 1.343, Wald χ2 (1)=7.614,  *p* = 0.006 |  |
| **MMSE** |  | U=15980.5*p* =0.041 | U=10296*p* =0.041 | U=7635.5*p* =0.043 |
| **FAQ** |  |  | U=7474*p* =0.003 | U=12732*p* =0.014 |
| **Lewy Bodies** | OR=0.516, 95% CI, -.984 to -.338, Wald χ2 (1)= 16.104,*p* < 0.001 | OR = 1.77, 95% CI, .175 to .966, Wald χ2 (1)=8.007,  *p* = 0.005 | OR=2.079, 95% CI, .160 to 1.303, Wald χ2 (1)=6.299,  *p* = 0.012 | OR=2.151, 95% CI, .261 to 1.272, Wald χ2 (1)= 8.83, *p* = 0.003 |
| **Subcortical Arteriosclerotic Leukoencephalopathy** | χ2(1, N=750)=9.960,  *p* = 0.002 |  |  | χ2(1, N=544)=13.142,  *p* < 0.001 |
| **Age quit smoking** |  |  | U=11949*p* = 0.048 |  |
| **Hypertension** | χ2(1, N=725)=5.569,  *p* = 0.018 |  |  |  |
| **Hypercholesterolemia** | χ2(1, N=716)=4.966  *p* = 0.026 |  |  |  |
| **Diabetes** |  |  |  |  |
| **Age visit to death** | U=60459*p* = 0.013 | U=28014.5*p* < 0.001 |  |  |
| **Age of cognitive decline** | U=60615.5*p* = 0.041 |  |  |  |
| **Age of death** | U=61664.5*p* = 0.047 |  |  |  |