Supplementary material

Antibody	Cone	Company	Host	Pretreatment	Incubation time (min)	Dilution
Beta-Amyloid	6F/3D	DAKO, Glostrup, Denmark	Mouse	EDTA pH 9 + formic acid	45	1/50
Anti p-tau	AT8	Thermo Scientific, Rockford, USA	Mouse	EDTA pH 9	45	1/1000
Tau RD3	8E6/C11	Millipore, Temecula, CA, USA	Mouse	Citrate pH 6 + formic acid	60	1/5000
Tau RD4	1E1/A6	Millipore, Temecula, CA, USA	Mouse	Citrate pH 6 + formic acid	40	1/50
α-synuclein	KM51	Novocastra, Newcastle, UK	Mouse	EDTA pH 9 + formic acid	30	1/200
Ubiquitin	Polyclonal	DAKO, Glostrup, Denmark	Rabbit	Citrate pH 6	30	1/4000
Anti p62	3/P62 LCK ligand	BD Biosciences, San Jose, USA	Mouse	EDTA pH 9	30	1/500
α - internexin	2E3	Novex, Invitrogen, Thermo Scientific, Rockford, IL, USA	Mouse	EDTA pH 9	30	1/800
FUS	Polyclonal	Sigma Aldrich, St Louis, MO, USA	Rabbit	Citrate pH 6	45	1/1000
TDP-43	2E2-D3	Abnova, Taipei, Taiwan	Mouse	Citrate pH 6	45	1/500
pTDP-43	11-9	Cosmo Bio, Tokyo, Japan	Mouse	EDTA pH 9	45	1/5000

Supplementary table 1: Antibodies used for immunohistochemistry and their pretreatments

Neuropathologic features	Odds Ratio (95% CI)	p-value a
Age at death	0.95 (0.87-1.02)	0.155
Sex (female)	2.04 (0.49 – 9.66)	0.338
Frontotemporal lobar degeneration	172.79 (21.29 – 4409.11)	**< 0.001**
Alzheimer's disease	24.26 (3.21 – 545.71)	**0.009**
α-synuclein	2.32 (0.14 – 25.53)	0.506
ARTAG	1.54 (0.11 – 15.57)	0.555
LATE	3.46 (0.41 – 35.37)	0.254
Vascular impairment	1.54 (0.11 – 17.57)	0.726

Supplementary table 2. Reduced model of logistic regression: The dependent (outcome) variable of the model was the presence of cognitive impairment (ALSci and ALS-FTD were considered together). The reduced model avoids covariates with collinearity problems.[a]

p values were obtained from Wald's test.

Abbreviations: ARTAG: age-related tau astrogliopathy; LATE: limbic-predominant age-related TDP-43 encephalopathy.