

**Supplementary Table 1.** Statistical comparisons of the brainstem volumetric measures between variant PSP and controls

Group comparisons		Medulla	Pons	SCP	Midbrain	Whole brainstem
Controls						
PSP-CBS	<i>p</i>	< 0.0005*	< 0.0005*	0.005	< 0.0005*	< 0.0005*
	%	24*	22*	28	26*	24*
PSP-PGF	<i>p</i>	0.625	0.995	0.927	0.347	0.779
	%	7	1	-4	9	4
PSP-P	<i>p</i>	0.014	0.002*	0.031	< 0.0005*	< 0.0005*
	%	17	24*	24	27*	23*
PSP-F	<i>p</i>	0.026	0.051	0.012	< 0.0005*	0.009
	%	14	15	31	22*	17
PSP-SL	<i>p</i>	0.024	0.006	0.063	< 0.0005*	0.002*
	%	17	22	18	25*	22*

*p* values and percentage volumetric difference between groups are shown with analyses adjusted for age, gender and scanner type. \*Significant difference between groups after correction for multiple comparisons. SCP: superior cerebellar peduncle, PSP-CBS: variant progressive supranuclear palsy (PSP) with predominant CBS, PSP-PGF: variant PSP with progressive gait freezing, PSP-P: variant PSP with predominant parkinsonism, PSP-F: variant PSP with predominant frontal presentation, PSP-SL: variant PSP with predominant speech/language disorder.