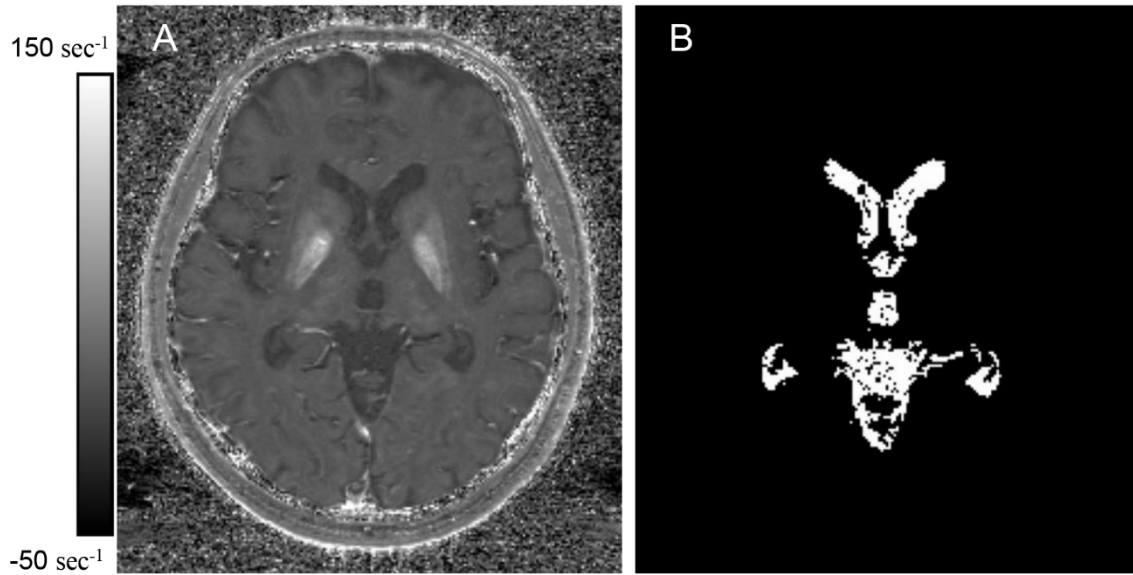
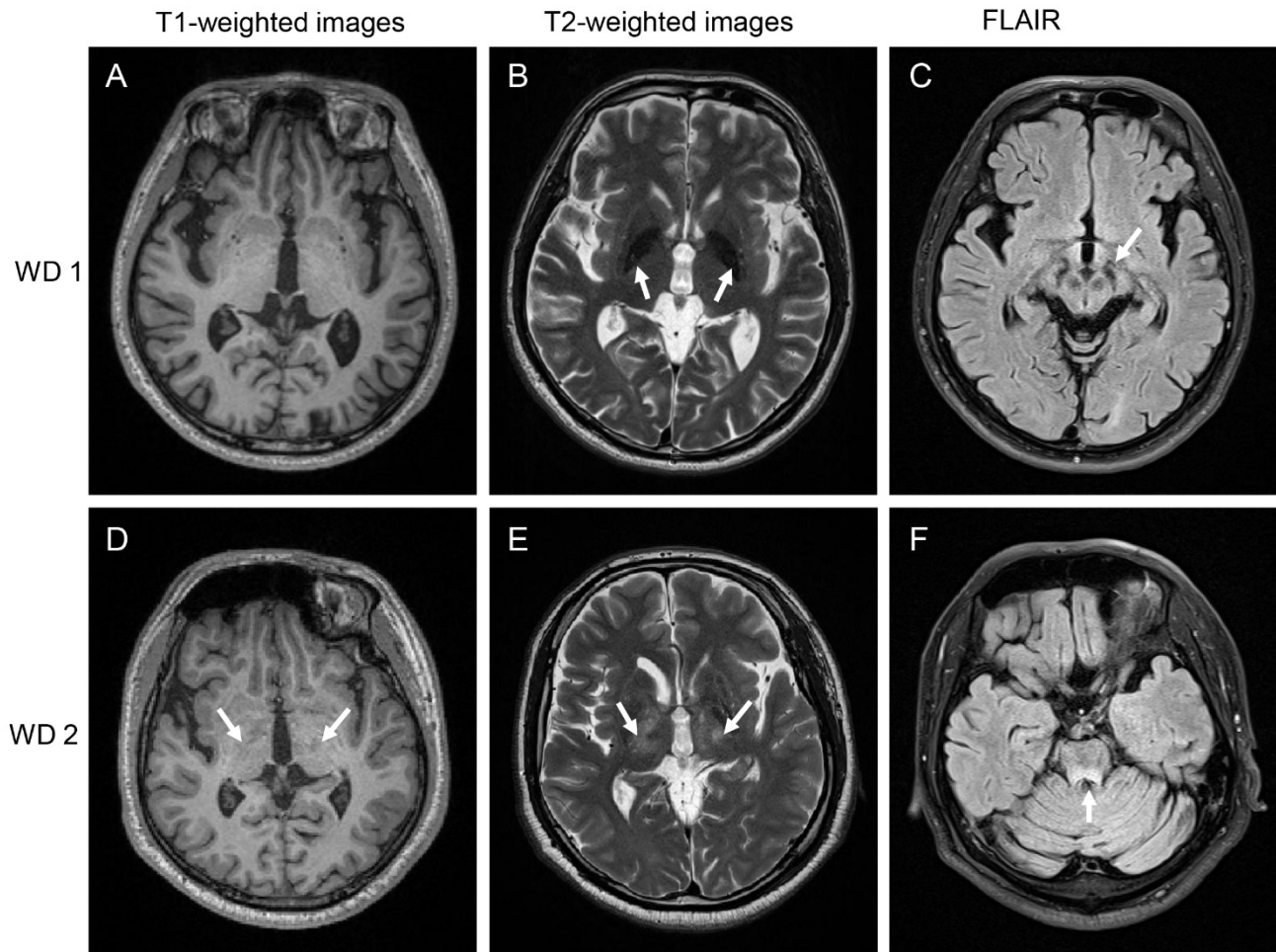


## Supplementary Materials



**Figure 1** Example images showing R2\* map and CSF mask (WD patient, 36 years old, male). R2\* map (**A**) was used to automatically determine the ventricular CSF mask  $M_{\text{CSF}}$  (**B**) using MEDI+0 algorithm.



**Figure 2** Conventional MRI abnormalities in neurological WD patients (WD 1: 36 years old, male; WD 2: 33 years old, male). The abnormalities were marked with white arrows. (A) normal T1-weighted images. (B) T2 hypointensities in the globus pallidus. (C) the sign of “face of giant panda” in the midbrain in FLAIR images. (D) T1 hypointensities in the lenticular nucleus and thalamus. (E) T2-hyperintensities in the lenticular nucleus and thalamus. (F) hyperintensities in the tegmentum of pons in FLAIR images. FLAIR, fluid-attenuated inversion recovery; WD, Wilson’s disease.

**Table 1** The susceptibility values and volumes of DGM in all subjects

	Susceptibility values (ppb)			Volumes (cm <sup>3</sup> )		
	WD (N = 17)	HC (N = 20)	<i>P</i> -value*	WD (N = 17)	HC (N = 20)	<i>P</i> -value*
CN	105.79 (42.08)	36.82 (10.4)	< 0.001	2.321 (0.793)	4.2 (0.618)	< 0.001
GP	261.52 (78.84)	111.26 (27.58)	< 0.001	1.885 (0.499)	3.156 (0.326)	< 0.001
Put	121.39 (48.01)	22.16 (12.89)	< 0.001	2.922 (0.845)	6.438 (1.343)	< 0.001
Th	13.6 (10.14)	− 7.83 (6.09)	< 0.001	7.78 (1.684)	10.151 (1.217)	< 0.001
SN	213.96 (66.92)	96.00 (30.42)	< 0.001	0.547 (0.085)	0.898 (0.1)	< 0.001
RN	139.8 (45.65)	75.98 (33.01)	< 0.001	0.346 (0.129)	0.409 (0.07)	0.114
DN	95.23 (54.95)	62.39 (27.1)	0.031	1.206 (0.272)	1.254 (0.337)	0.614

Standard deviations are in parentheses.

\* *P*-values were corrected by controlling the false discovery rate at a level of 0.05.

CN, head of the caudate nucleus; DGM, deep gray matter; DN, dentate nucleus; GP, globus pallidus; N, number; Put, putamen; RN, red nucleus; SN, substantia nigra; Th, thalamus; WD, Wilson's disease.

**Table 2** Stepwise multiple regression models using susceptibility values of DGM to predict UWDRS neurological subscores

Model	R <sup>2</sup>	Adjusted R <sup>2</sup>	Model P-value	Predictor	Unstandardized Coefficient	Standardized Coefficient	P-value
Model 1	0.415	0.376	0.005	Put	0.163 (0.05)	0.644	0.005
Model 2	0.678	0.632	< 0.001	Put	0.146 (0.039)	0.577	0.002
				DN	0.114 (0.034)	0.517	0.004
Model 3	0.774	0.722	< 0.001	Put	0.063 (0.049)	0.248	0.22
				DN	0.123 (0.03)	0.555	0.001
				CN	0.13 (0.055)	0.45	0.035
Model 4	0.745	0.709	< 0.001	CN	0.181 (0.039)	0.628	< 0.001
				DN	0.129 (0.03)	0.585	0.001

Standard errors are in parentheses.

$P < 0.05$  was considered significant. CN, head of the caudate nucleus; DGM, deep gray matter; DN, dentate nucleus; Put, putamen