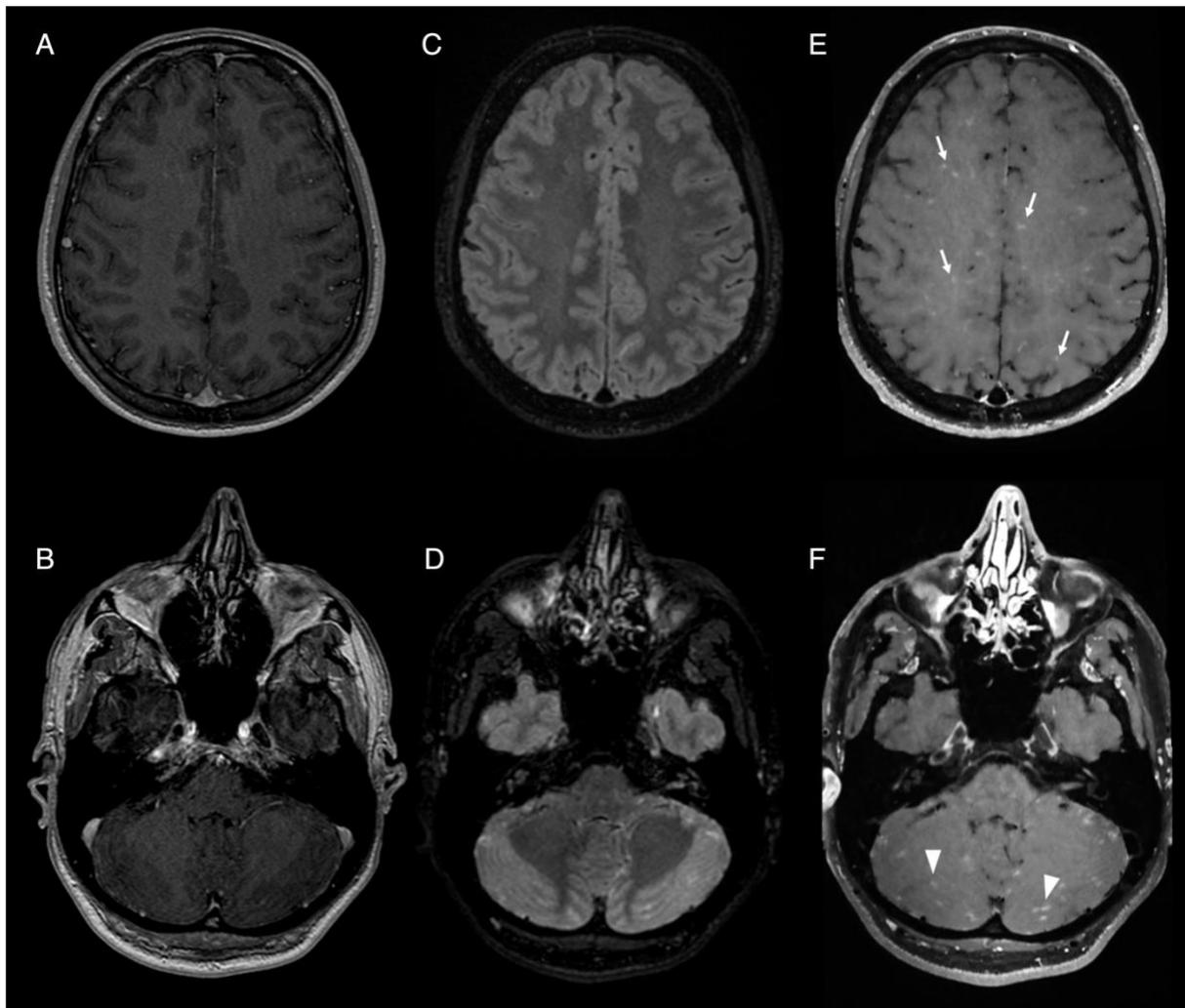
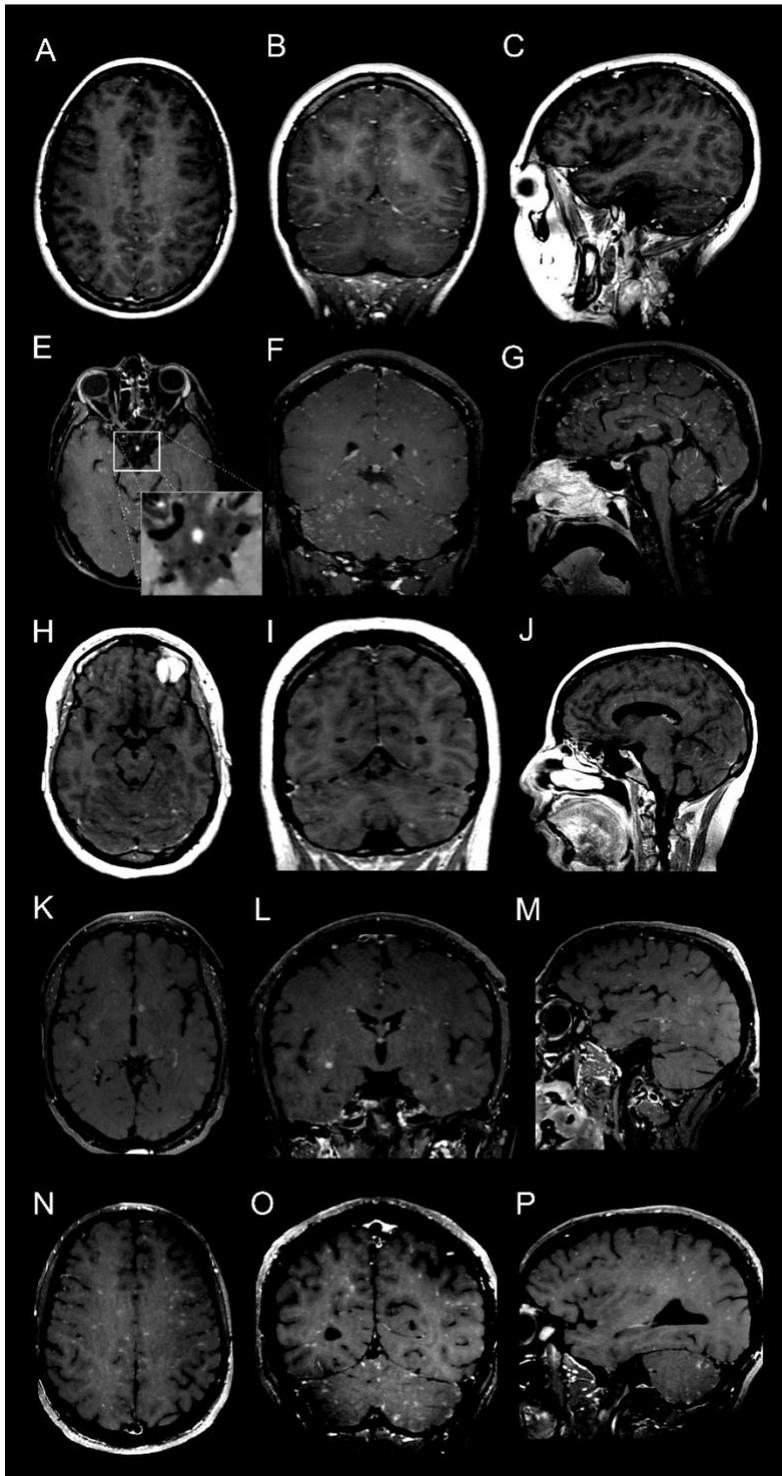


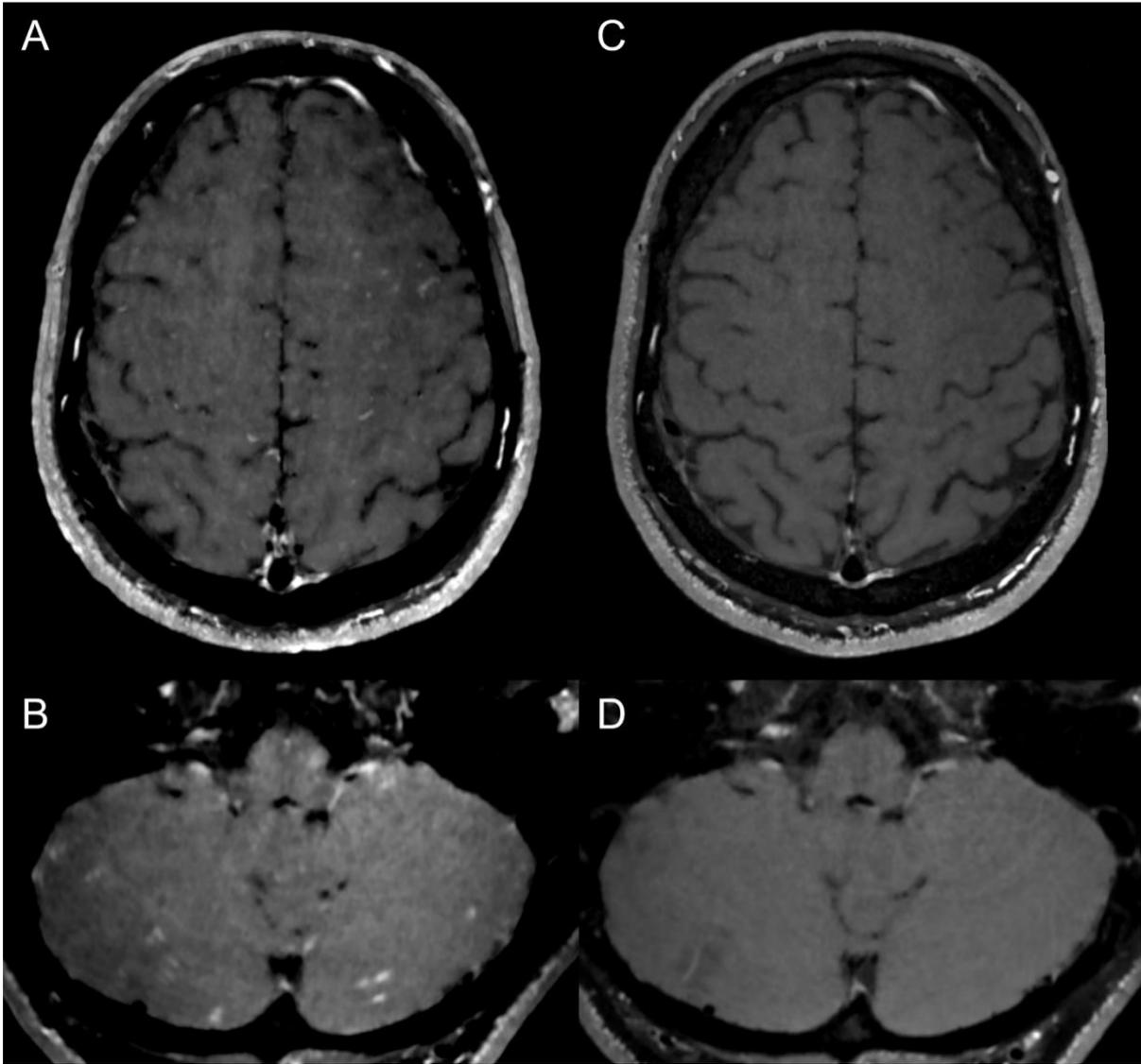
ONLINE SUPPLEMENTAL DATA



Supplementary Figure 1. Patient 6. Comparison between contrast-enhanced 3D T1 gradient echo sequence –FSPGR– (A and B), contrast-enhanced 3D FLAIR (C and D) and contrast-enhanced VW-MRI (E and F). Note conspicuous detection by contrast-enhanced VW-MRI of small parenchymal (arrows on E) and leptomeningeal (arrowheads on F) foci, compared to contrast-enhanced FSPGR and contrast-enhanced 3D FLAIR. All images acquired synchronously.



Supplementary Figure 2. Summary of positive findings on contrast-enhanced VW-MRI. Rows 1-5 show patients 1-3, 5 and 6, respectively. Axial (first column), coronal (second column) and sagittal (third column) reconstructions show main findings. Inset in image E, details absence of vessel wall enhancement in Circle of Willis arteries. Variations in VW images quality observed in patients 1 and 3 compared to patients 2, 5 and 6 are explained below on Supplementary Table 2.



Supplemental Figure 3. Patient 6. Initial contrast-enhanced T1-weighted VW-MRIs (A and B) show supratentorial multifocal parenchymal and infratentorial leptomeningeal enhancement. Follow-up contrast-enhanced T1-weighted VW-MRI (C and D) after 1 year of treatment, shows complete enhancement resolution

Supplementary Table 1. Summary of demographic, clinical and enhancement pattern characteristics on initial VW-MRI.

Patient No.	Demographic		Clinical					VW-MRI Enhancement Pattern					
	Sex	Age (years)	Medical History	Symptoms	Altered tests	Treatment at time of initial VW-MRI	Diagnosis ^a	Punctuate or focal	Peri-vascular	Lepto-meningeal	Pachy-meningeal	Arterial wall	Cochleo-vestibular
1	F	19	Epilepsy (Cortical dysplasia)	Seizures, headache, transient photopsias, photophobia and phonophobia	Pleocytosis and elevated protein on CSF, SNHL and AWH	none	Definite	punctuate, ST and IT	yes	yes, IT	yes	no	no
2	F	29	None	Headache, nausea, speech disorder, drowsiness and right brachio-crural hemiparesis	Pleocytosis and elevated protein on CSF, SNHL and BRAO	none	Definite	both, ST and IT	yes	yes, ST and IT	no	no	no
3	F	41	Hypothyroidism	Perioral and brachial hypoesthesia, headaches, bilateral decreased visual acuity and tinnitus	SNHL and BRAO	low dose corticosteroid	Definite	punctuate, ST and IT	no	yes, ST and IT	no	no	no
4	M	35	Type 2 Diabetes	Headache, instability, transient spatial and temporal disorientation	Pleocytosis and elevated protein on CSF, BRAO	low dose corticosteroid	Probable	no	no	no	no	no	no
5	M	37	None	Headache, bradypsychia, bilateral tinnitus	Elevated protein on CSF, unilateral SNHL, BRAO	none	Definite	ST	no	no	no	no	no
6	M	57	None	Headache, apathy, temporal disorientation	Pleocytosis and elevated protein on CSF, AWH	none	Probable	both, ST	no	yes, IT	no	no	no

^aAccording to Kleffner et al. diagnostic criteria. F: female, M: male, VW-MRI: vessel wall magnetic resonance imaging, BRAO: branch retinal artery occlusion on fluorescein angiography, SNHL: sensorin eural hearing loss on audiometry, CSF: cerebrospinal fluid, AWH: arterial wall hyperfluorescence on fluorescein angiography, ST: supratentorial, IT: infratentorial.

Supplementary Table 2. MRI scanner characteristics and T1-weighted vessel wall imaging sequence parameters

	Variant A	Variant B
MRI scanner manufacturer and model	GE Discovery 750	GE Discovery 750
MRI field strength	3T	3T
Coil	32-channel head coil	32-channel head coil
Sequence brand name	CUBE	CUBE
Sequence type	3D fast spin echo	3D fast spin echo
Fat saturation	No	Yes
Slice thickness	1 mm	0.6 mm
Matrix	320 x 288	372 x 372
Field of view (FOV)	24 cm	24 cm
Number of averages (NEX)	2	1
Repetition time (TR)	602 ms	772 ms
Echo time (TE)	14.7 ms	20.962 ms

Vessel wall imaging sequence variant A was used until August 6, 2019; variant B was applied afterwards. GE: General Electric, T: Tesla