

## Supplementary Material

<b>a) Multimodal-CT Scan parameters</b>	<b>NCCT and CECT<sup>#</sup></b>	<b>CTP<sup>x</sup></b>	<b>CTA<sup>y</sup></b>
Kilovolts	120	80	100/140 (dual energy)
mAs	care dose/ quality ref mAs 231	120	care dose/ quality ref mAs 96
Pitch	0.55	N.A.	0.7
Collimation (mm)	40 x 0.6	32 x 1.2	128 x 0.6
Rotation time	1	0.28	0.28
Section thickness/interval (mm)	0.75/0.5	1.5/1	0.75/0.5
Reconstruction thickness/interval (mm)	MPR 3 planes 3/3	MPR axial 5/5	MIP 3 planes 11/3

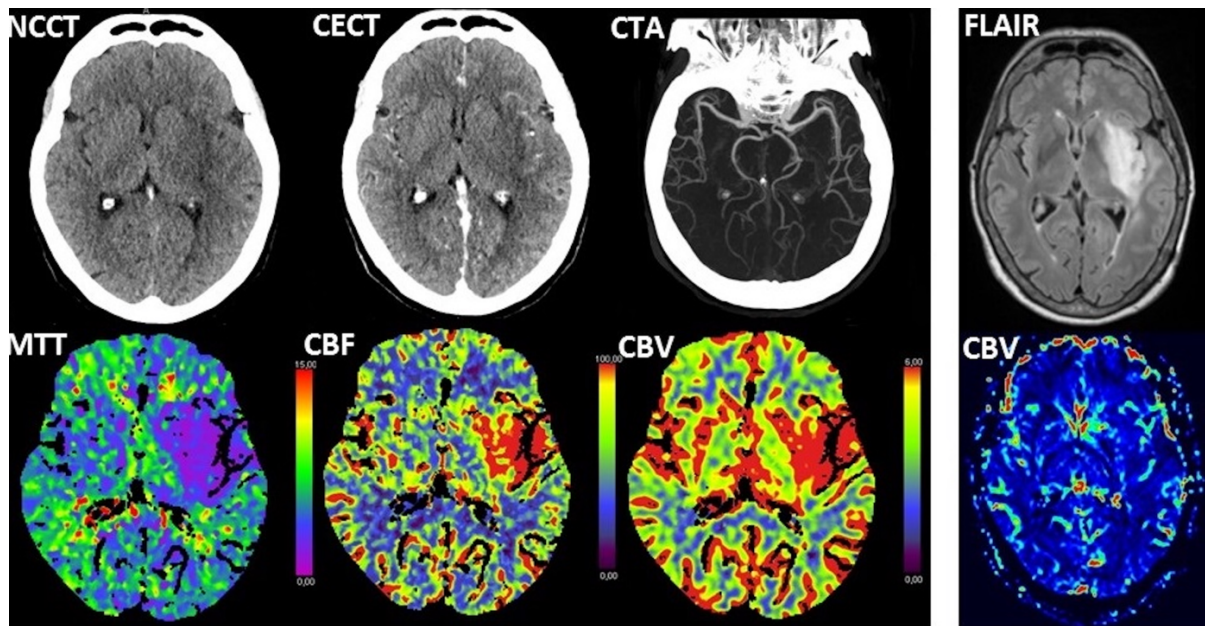
<b>b) MR Scan parameters</b>	<b>DWI</b>	<b>T2</b>	<b>FLAIR</b>	<b>T2*</b>
TR, msec	5870	7390	8000	600
TE, msec	68	94	85	19.9
TI, msec	N.A.	N.A.	2373	N.A.
Flip angle, deg	180	150	150	20
Field of view (mm)	220	220	220	220
Matrix	192 x 192	448 x 189	256 x 179	256 x 192
Slice thickness (mm)	4	3	3	3
Parallel imaging factor	2x	none	2x	3x
Scanning plane	Axial	axial	axial	Axial
Scan time	3:09	1:52	2:10	1:38

Supplementary Table 1: Multimodal-CT (a) and MR (b) technical parameters.

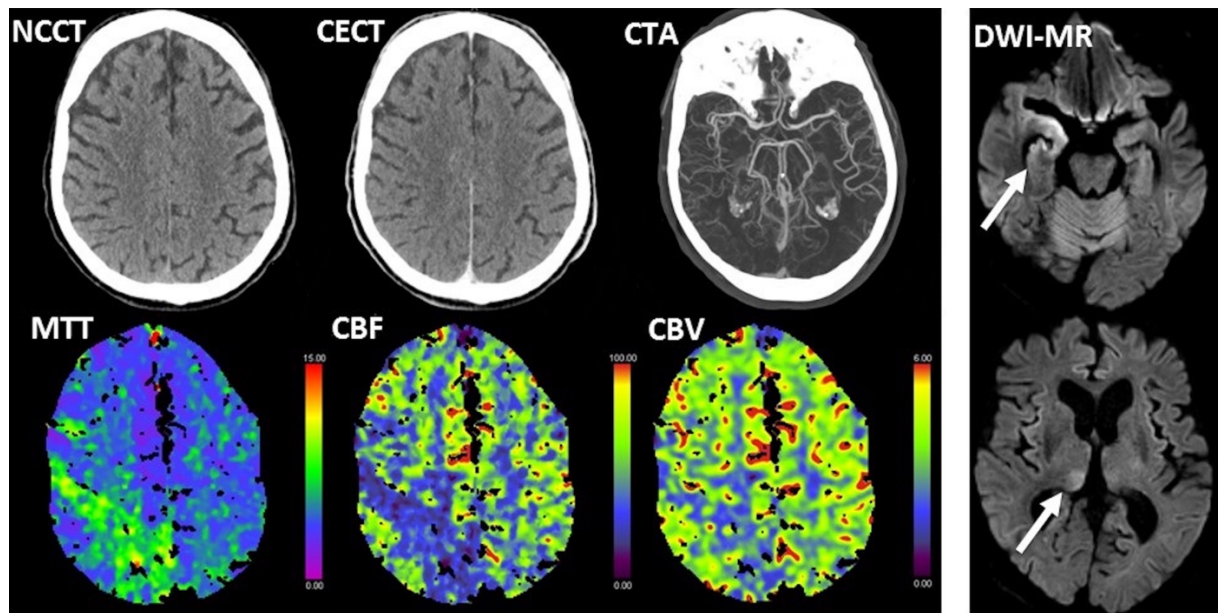
<sup>#</sup> Contrast-enhanced CT (CECT) was performed when necessary.

<sup>x</sup> injection of 15 mL of saline, followed by 40 mL of Accupaque (Iodine 350 mg/mL) and by 40 mL of saline at a rate of 5 mL/sec

<sup>y</sup> injection of 15 mL of saline, followed by 50 mL of Accupaque (Iodine 350 mg/mL) and by 40 mL of saline at a rate of 4.5 mL/sec



**Supplementary Figure 1.** Left panel: hyperperfusion in the left temporo-insular cortex in an 83-year-old female found unconscious. On NCCT there is a hypodense lesion in the left lenticulo-capsular region, insula and temporal lobe, with partial sparing of the cortical ribbon. No contrast enhancement or CTA abnormalities are found. Right panel: MR shows an infiltrative lesion suggestive of a low-grade glioma (biopsy proved a diffuse astrocytoma, IDH mutant). MR Perfusion (CBV) demonstrates regression of perfusion abnormalities visible on multimodal-CT, indicating seizure related changes.



**Supplementary Figure 2.** Left panel: right temporo-parietal prolonged MTT, decreased CBV and decreased CBF, consistent with hypoperfusion involving two adjacent vascular territories in a 79-year-old male with acute left hemiplegia and aphasia with normal findings at NCCT, CECT and CTA. Right panel: Diffusion MR excludes ischemia and demonstrates seizure changes (arrow) in the right hippocampus and pulvinar.