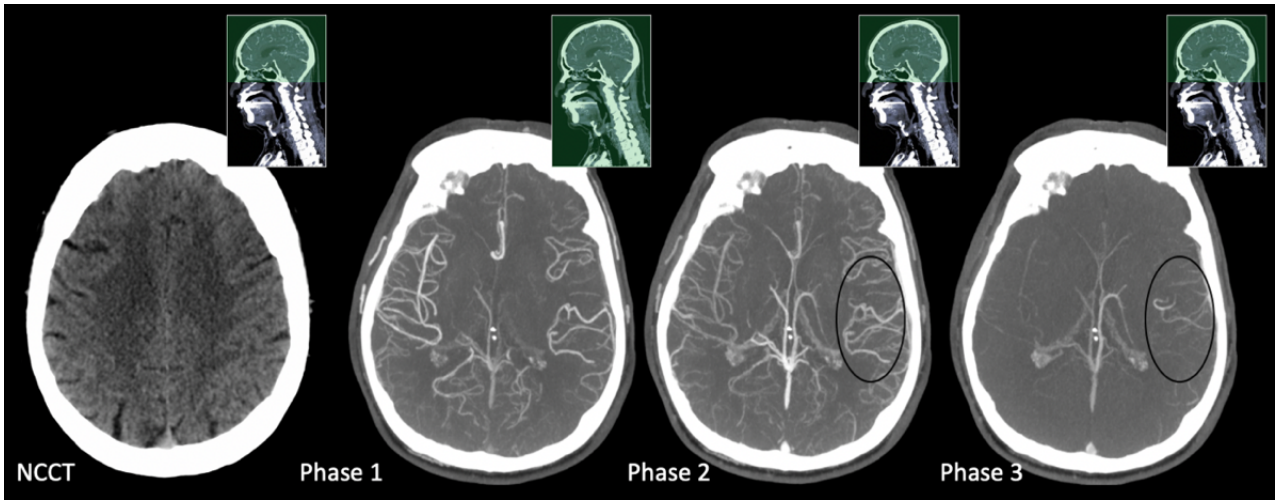
Supplementary Material



Supplementary Figure 1: Typical imaging protocol using multiphase CTA. First, a non-contrast head CT is obtained to rule out hemorrhage and provide an estimate of early ischemic parenchymal changes. mCTA is then obtained. The 1st phase covers the extracranial vasculature from the aortic arch to vertex. The 2nd and 3rd phases cover the intracranial vasculature only (skull base to vertex). The delayed filling of collateral vessels in the second and third phases (black circles) point towards the site of occlusion (in this case a left-sided M2 segment middle cerebral artery occlusion). Detecting this occlusion on the first phase, which is the only available phase in regular single-phase CTA, would have been challenging. Green areas in the right upper images indicate the axial coverage of each phase.

Supplementary Table 1: Anatomical definition of vessel segments as they were used in this study.

Middle cerebral artery	
M1 segment	Middle cerebral artery proximal to the M1 bifurcation
M2 segment	From the main MCA bifurcation/trifurcation to the circular sulcus of the insula [1]
M3/4 segment	From the circular sulcus of the insula to the external/superior surface of the Sylvian fissure [1]
Anterior cerebral artery	
A1 segment	Anterior cerebral artery proximal to the origin of the anterior communicating artery [2]
A2 segment	From the origin of the anterior communicating artery to the origin of the callosomarginal artery [2]
A3/4 segment	From the origin of the callosomarginal artery to the artery's posterior turn above the corpus callosum) [2]
Posterior cerebral artery	
P1 segment	Posterior cerebral artery proximal to the origin of the posterior communication artery [3]
P2 segment	From the origin of the posterior communicating artery to point of entrance in the quadrigeminal cistern [3]
P3/4 segment	Segment within the quadrigeminal cistern [3]

Supplementary References

1. E F. Die Lageabweichungen der vorderen Hirnarterie im Gefassbild. *Zentralblatt Neurochirurgie.* 1938.
2. Lawton MT MZ. *Schmidek & Sweet Operative Neurosurgical Techniques.* Elsevier; 2012.
3. Kuybu O, Tadi P, Dossani RH. Posterior Cerebral Artery Stroke. In: *StatPearls.* Treasure Island (FL)2019.