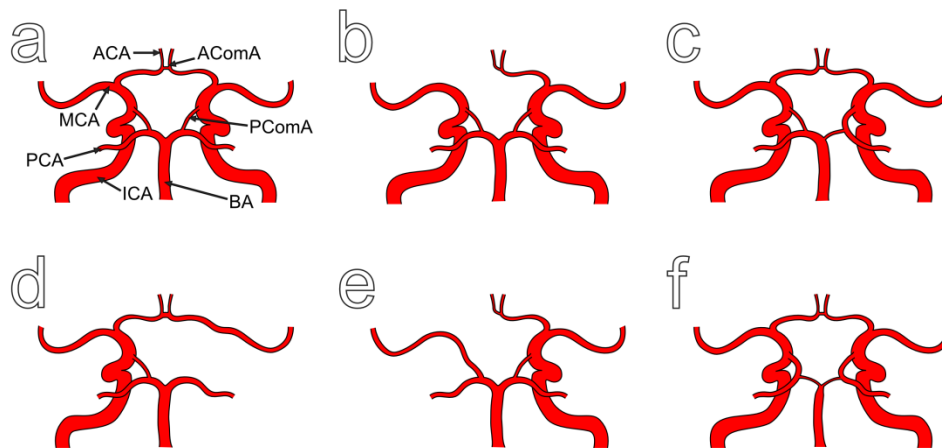
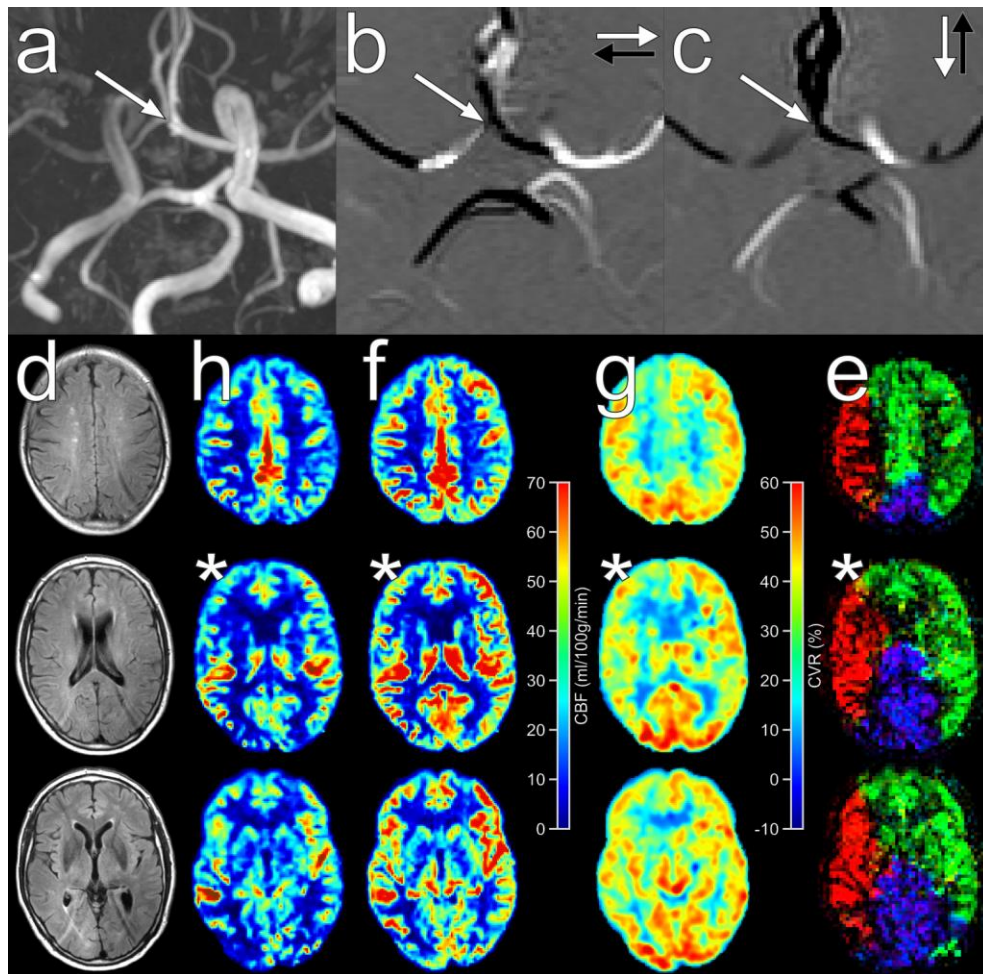


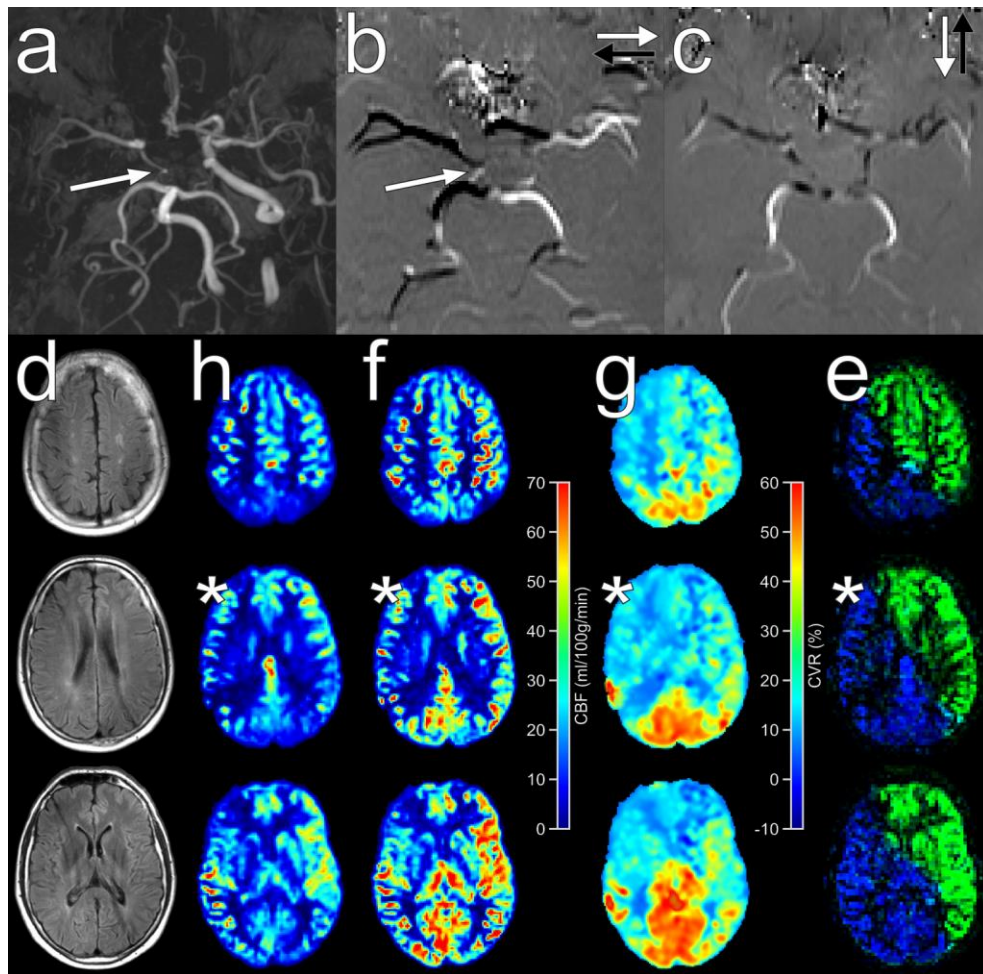
Supplemental material



Supplemental figure 1. Schematic overview of a complete circle of Willis (CoW) (a) and several variants (b-f) in which segments of vessels (b, d, and f) may be hypoplastic or absent, or occluded (d and e). Two variations are shown (b and c) in which one of the cerebral arteries receives blood from a different brain feeding artery. The left ACA is supplied via the AComA by its contralateral ICA due to an absent A1 segment (b, star). In case of a hypoplastic P1 segment (fetal-type CoW) the ipsilateral PCA receives blood via the PComA (anterior-to-posterior collateral flow) from its ipsilateral ICA (c, arrow), which can also occur bilaterally (f, arrows). In case of an ICA occlusion, the CoW diverts blood accordingly. Blood may be redistributed via anterior collateral flow (d, star) or posterior-to-anterior collateral flow (e, star).



Supplemental figure 2. Case example of a 69-year-old male symptomatic patient with right-sided ICA stenosis >70%. There is anterior collateral flow from left to right via the AcomA (a-c, arrow). FLAIR images (d) correspond with ASL perfusion images before (h) and after (f) acetazolamide, CVR images (g), and territorial ASL maps (e). Reduced CBF at baseline (h, star), after a vasodilatory challenge (f, star) and impaired CVR (g, star) is present in the right hemisphere. Territorial ASL images show anterior collateral flow via the AComA from the contralateral ICA (e, green) towards the right ACA territory (e, star).



Supplemental figure 3. Case example of a 47-year-old male asymptomatic patient with right-sided ICA occlusion. Posterior-to-anterior collateral flow (a, arrow) can be appreciated as illustrated in supplemental figure 1e. There is flow in the right PComA segment (a-b, arrow) towards the right MCA territory from the basilar artery. FLAIR images (d) correspond with ASL perfusion images before (h) and after (f) acetazolamide, CVR images (g), and territorial ASL maps (e). Reduced CBF at baseline (h) and after a vasodilatory challenge (f) is present in both hemispheres. Globally impaired CVR (g) is most notable in the right MCA territory (g, star). Territorial ASL images show anterior collateral flow from the contralateral ICA (e, green) towards the right ACA territory (e), as well as posterior-to-anterior collateral flow from the basilar artery to the right MCA territory (e, star).