

Clinically Important Variants in Intra Cranial Arterial Circulation as Demonstrated in MR Angiogram Studies in a Tertiary Care Center in Sri Lanka

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The cerebral arterial circulation demonstrates a range of clinically important variants which are frequently found in the general population. The aim of the study was to describe the frequency of cerebral arterial variants encountered in a tertiary care setting in Sri Lanka. A retrospective cross sectional descriptive study was conducted at the Department of Neuroradiology at National Hospital of Sri Lanka (NHSL), on images of patients who underwent non contrast 3D Time of Flight (TOF) MRA studies from 1st of January 2017 to 31st of January 2021, in a 3T Philips MR systems Ingenia machine. (TE/TR (ms) 23/3.5; Acquisition matrix M×P 320 x 246;) Systematic sampling was done to obtain a sample size of 392. Images were reviewed for anatomical configuration using maximum intensity projection (MIP) and 3D volume rendering. Anatomical variations were grouped as variations in Circle of Willis (COW) and variations in Carotid-basilar anastomosis and other variants. Ethical clearance was obtained by the Ethics Review Committee of NHSL. Sample consisted of 392 studies out of which 156 (39.79%) were of females and 256 (65.30%) were of males. Age ranged from 14 – 85 years. A variant in the intracranial arterial circulation were detected in 11.22% of patients (44/392). Most common variant was a hypoplastic or absent A1 segment of the Right Anterior cerebral artery (ACA) with an incidence of 3.57% (14/392). Variants were most common in the COW (8.92%) with variants in the anterior part of the COW (5.61%) being more common than in the posterior part (3.31%). Persistent Carotid-Basilar anastomosis were seen in 1.02% out of which 100% were persistent trigeminal arteries. Other variants in the anterior and posterior circulation accounted for 1.27% of cases. The intracranial arterial circulation demonstrates a range of variants which are important to be recognized due to its clinical implications, which would in turn aid in endovascular interventions.

Keywords: Variants, Intra cranial arterial circulation, Magnetic Resonance Imaging (MRA)