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## Anatomical variants of the Circle of Willis: A computed tomography angiography based study

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Any variations occur in the normal anatomy of cerebral vessels may condition the appearance and severity of cerebral vascular diseases such as aneurysm, infarction and other anomalies. The knowledge of the anatomical variants, will help the radiologists and neurosurgeons in diagnosis and management of cerebral vascular diseases. It is proven that, lack of knowledge of the anatomical variants of Circle of Willis is the cause of approximately 10% of medical errors. Aim of this study is to identify the frequency of anatomical variants in Circle of Willis by using Computed Tomography Angiography (CTA). In this retrospective study, a total of 342 CTA COW angiography images, from 227 males and 115 females were analyzed by using Multi Planar Reconstruction (MPR) images, Maximum Intensity projection (MIP) images and Volume Rendering (VR) images. Variants present in anterior circulation (A1 segment, Anterior Communicating artery (AComA) and A2 segment), posterior circulation (P1 segment, Posterior Communicating artery (PComA) and P2 segment), Middle cerebral artery (MCA), Basilar and vertebral artery, internal carotid artery (ICA), and others were studied. Data was analyzed by SPSS. Typical form of Circle of Willis were present in 28.07% of the study population. Atypical form of Circle of Willis were present in 71.9%. Most anatomical variant of COW was hypoplastic vertebral artery of posterior circulation (43.48%) followed by Fetal origin of posterior cerebral artery (29.7%) and A1 Hypoplastic of anterior circulation (22.9%). Most common anatomical variant of COW was hypoplastic vertebral artery of posterior circulation (43.48%) followed by Fetal origin of posterior cerebral artery (29.7%) and A1 Hypoplastic of anterior circulation (22.9%).

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