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Segmental hypoplasia of the basilar artery: a case report and review of literature

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The anomalies of the basilar artery are rare when compared with those ones pertaining to the circle of Willis vessels. Partial duplication or fenestration is rather common (0.6% to 1.8% in the angiographic descriptions); on the other hand, other anomalies, including complete duplication, hypoplasia and aplasia are exceptional. A rare case of segmental hypoplasia of the basilar artery in a 49-year-old man with transient vertebrobasilar (VB) ischemia, explored by magnetic resonance imaging (MRI) and digital angiography (DA), is reported. The embryology, the clinical relevance and the magnetic resonance findings of this arterial anomaly are discussed, with a review of other six reported cases. The appearance of a segmental aplasia was suggested in our case by MRI, and successively confirmed not only by time-of-flight MR-angiography (TOF-MRA) but also by DA. Only ultrathin-slice T2-weighted (w) images revealed the real finding of basilar artery (BA) hypoplasia; this sequence, not employed in previously reported cases, is mandatory to allowing a clear differential diagnosis between BA aplasia and hypoplasia. In conclusion, segmental hypo-aplasia of the BA is an exceptional embryological anomaly. This anomaly may be of clinical importance, and it should be considered among the potential causes of vertebrobasilar insufficiency in young adults. These cases should be investigated by MR and MRA; we stress the importance of ultrathin slice T2-weighted sequences in order to discriminate between aplasia and hypoplasia.

Keywords: basilar artery, aplasia, hypoplasia, magnetic resonance angiography, digital angiography