Anterior Inferior Cerebellar Artery Anomalies

The anterior inferior cerebellar artery-posterior inferior cerebellar artery (AICA-PICA) common trunk anomaly is reportedly one of the most common vessel variants in the posterior circulation [1].

A healthy 59-year-old male with a unilateral sporadic vestibular schwannoma.

The patient elected to undergo a translabyrinthine approach for resection of a vestibular schwannoma. An aberrant loop of AICA was encountered during the temporal bone dissection within the petrous part of the temporal bone.

The patient suffered a presumed ischemic insult resulting in a fluctuating ipsilateral facial paresis and atypical postoperative nystagmus.

MRI demonstrated an ischemic lesion in the vascular distribution of the right anterior-inferior cerebellar artery, including the lateral portion of the right cerebellar hemisphere, middle cerebellar peduncle, and bordering the right cranial nerve VII nucleus. His functional recovery was excellent, essentially identical to the anticipated course in an otherwise uncomplicated surgery.

This case highlights the irregular anatomy of the AICA as well as the importance of thorough neurological exams in the postsurgical lateral skull base patient [2].

Anomaly in which a segment of the anteroinferior cerebellar artery (AICA) is embedded in the dura or bone surrounding the subarcuate fossa, a small depression in the bone posterior to the internal acoustic meatus (IAM), through which the subarcuate artery enters the bone. This anomaly places the artery at risk in removing the posterior wall of the IAM.

An anomalous AICA having a segment that was embedded in the dura covering on the bone surrounding the subarcuate fossa was found during a microsurgical dissection course. The senior author (ALR) has observed this anomaly in four patients during surgery for acoustic neuromas and in three specimens in microsurgery dissection courses. To define the microsurgical anatomy of the anomalous artery further, the latex-injected specimen was dissected in a stepwise manner using x3 to x40 magnification.

The anomalous AICA described in this report bifurcated into a rostral trunk and a caudal trunk near the facial-vestibulocochlear nerve complex. The caudal trunk formed a sharp lateral loop that was embedded in the dura covering the subarcuate fossa. The involved trunk continued to supply the suboccipital area normally supplied by the posteroinferior cerebellar artery, which was hypoplastic. The dura surrounding the anomalous loop was opened, and the adjacent bone was removed to free the anomalous loop from the subarcuate fossa so that the artery could be displaced medially to remove the posterior wall of the IAM. Although it has been reported that the AICA may occasionally be adherent to the dura over the subarcuate fossa, this study is the first to demonstrate an AICA that is embedded in the dura and bone of the subarcuate fossa.

Mobilizing the AICA loop that is embedded in the subarcuate fossa posterior to the IAM places the involved AICA at significant risk in exposing the contents of the IAM [3].

Reports of hemifacial spasm (HFS) associated with AICA-PICA common trunk are very rare. In the present study, we describe methods of microvascular decompression (MVD) for HFS caused by AICA-PICA common trunk compression.

Among 159 patients who underwent MVD for HFS, 16 patients had compression of the root exit zone by the AICA-PICA common trunk anomaly. The types of compression were classified into 2 groups: common trunk artery compression group and branching vessel compression group.

The common trunk artery compression group consisted of 11 patients (69%), and the branching vessel compression group consisted of 5 patients (31%). The rostral branch (feeding the original AICA territory) coursed between the seventh and eighth cranial nerves in 5 patients, and in 13 patients (81%), the offending vessel harbored perforators around the root exit zone. Among 16 patients, 14 (87.5%) required interposition of the common trunk or the branching vessel, and in 2 patients, decompression was completed by the transposition method. Fifteen patients experienced sufficient results, and 1 had severe residual spasm. Transient facial palsy developed in 2 patients. No patients encountered recurrence.

Reports concerning decompression methods of AICA-PICA common trunk anomaly are very rare. The tortuosity of the common trunk and perforators from the offending vessel make the usual repositioning of the offending artery much more difficult, and adequate decompression techniques are required for successful MVD [4].

References

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