Significance of Anomalous Anterior Inferior Cerebellar Artery—Posterior Inferior Cerebellar Artery Common Trunk Compression in Microvascular Decompression for Hemifacial Spasm

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■ BACKGROUND: **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, but 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.**

■ METHODS: **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.**

■ RESULTS: **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.**

■ CONCLUSIONS: **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.**

INTRODUCTION

Hemifacial spasm (HFS) is caused by vascular compression at the root exit zone (REZ) of the seventh cranial nerve, and microvascular decompression (MVD) has been established as the best treatment for HFS, with long-term cure rates being reported as high as 84% to 98%.[1-6] The common offending vessels are the anterior inferior cerebellar artery (AICA), posterior inferior cerebellar artery (PICA), and vertebral artery (VA). In previous studies,[7-9] AICA—PICA common trunk anomalies have been reported in many cases, but reports of HFS associated with AICA—PICA common trunk anomaly are very rare,[8,9] particularly with regard to techniques of successful decompression. We encountered AICA—PICA common trunk compression as the cause of HFS in 16 patients in a consecutive series of 159 patients with HFS. Because of the structural variations in common trunk anomalies when the AICA—PICA complex is involved, it is difficult to obtain a complete and permanent cure of symptoms with MVD because safe repositioning of a compressing artery is not easy. In the present study, we analyzed patients who underwent MVD for HFS caused by

Key words
- Anterior inferior cerebellar artery
- Common trunk anomaly
- Hemifacial spasm
- Microvascular decompression
- Posterior inferior cerebellar artery

Abbreviations and Acronyms
AICA: Anterior inferior cerebellar artery
BVC: Branching vessel compression
CTC: Common trunk compression
HFS: Hemifacial spasm
MVD: Microvascular decompression
PICA: Posterior inferior cerebellar artery
REZ: Root exit zone
VA: Vertebral artery

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Citation: World Neurosurg. (2016) 92:15-22.
http://dx.doi.org/10.1016/j.wneu.2016.04.100

Journal homepage: www.WORLDNEUROSURGERY.org

Available online: www.sciencedirect.com

Table 1. Summary of 16 Patients with Hemifacial Spasm (HFS) Caused by the Anterior Inferior Cerebellar Artery (AICA)-Posterior Inferior Cerebellar Artery (PICA) Common Trunk Anomaly

Patient Number	Age (years)	Sex	Side	Pretreatment	Offending Artery	Compression Type	7/8 Artery	Perforator	F/U (months)	Outcome	Method of Decompression				Complications
											CT-inter	CT-trans	BV-inter	BV-trans	
1	56	F	R	Botox	Dominant AICA	CTC	–	+	107	Excellent	○				–
2	60	F	L	Botox	Dominant AICA	BVC	–	–	88	Excellent	○				–
3	55	F	R	Botox	Dominant AICA	CTC	–	–	82	Good	○				Facial palsy*
4	65	F	R	–	Dominant AICA	CTC	–	+	80	Excellent		○			–
5	58	F	R	–	Dominant AICA	CTC	–	+	70	Poor	○			○	Hoarseness/ Dysphagia*
6	42	M	L	–	Dominant PICA	CTC	+	+	64	Excellent	○				–
7	72	F	L	Botox	Dominant PICA	CTC	–	+	61	Excellent	○			○	–
8	19	F	R	Botox	Dominant AICA	CTC	+	–	60	Excellent		○		○	–
9	66	F	R	Botox	Dominant AICA	CTC	–	+	51	Good	○		○		–
10	68	F	R	Botox	Dominant AICA	BVC	+	+	43	Excellent			○		–
11	47	M	L	Botox	Dominant AICA	CTC	–	+	40	Excellent	○			○	–
12	44	F	L	Botox	Dominant AICA	BVC	+	+	36	Excellent			○		–
13	64	M	L	–	Dominant AICA	CTC	–	+	23	Good	○			○	Facial palsy*
14	41	F	L	–	Dominant AICA	BVC	+	+	20	Excellent				○	–
15	47	F	L	–	Dominant AICA	BVC	–	+	15	Excellent	○				–
16	61	F	R	–	Dominant AICA	CTC	–	+	7	Excellent	○			○	–

7/8 artery, artery between the 7th and 8th cranial nerves; F/U, follow-up; CT-inter, interposition of the common trunk; CT-trans, transposition of the common trunk; BV-inter, interposition of the branching vessel; BV-trans, transposition of the branching vessel; CFC, common trunk compression; BVC, branching vessel compression.

*Transient.