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Research Article

Microvascular Decompression for Hemifacial Spasm in Elderly Patients

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Abstract

Background: Hemifacial spasms (HFS) can be debilitating and disabling because they are triggered by the activities of daily living. Symptoms can lead to depression or sudden eye closure while driving, placing patients at risk. In this study, we report cases of HFS in patients aged > 80 years old who were treated with microvascular decompression (MVD) with good results.

Materials and Methods: Fifteen patients aged > 80 years (80-90 years; six males and nine females) underwent MVD for HFS over the past four years. Surgery was performed using the retrosigmoid approach with continuous monitoring of the auditory brainstem response. To avoid stretching the eighth cranial nerve, which causes hearing loss, limited spinal fluid was drained, and decompression was applied after reaching the nerve. Intraoperatively, the decompression method was determined using either transposition or interposition, with particular attention paid to the vessels responsible for arteriosclerosis.

Results: Eighty percent of case outcomes were excellent and 20% were good; favorable results were achieved in all cases. The mean follow-up period was 24 months with no permanent complications.

Conclusions: Based on the good outcomes obtained, we suggest that surgical treatment of HFS for elderly patients should be considered after a thorough evaluation of the patient's general condition.

Keywords: Microvascular Decompression; Hemifacial Spasm; Elderly; Treatment

Abbreviations

VA: Vertebral Artery; AICA: Anterior Inferior Cerebellar Artery; PICA: Posterior Inferior Cerebellar Artery; MRA: Magnetic Resonance Angiogram; MRC: Magnetic Resonance Cisternogram; MVD: Microvascular Decompression; ABR: Auditory Brain Stem Response; HFS: Hemifacial Spasm

Introduction

Hemifacial spasms (HFS) are triggered by daily activities and can cause considerable stress and limitations in daily life. In very old patients, HFS can cause depression or sudden attacks that can lead to loss of vision in one eye, which can be life-threatening [1]. Although many reports have shown that microvascular decompression (MVD) for the treatment of HFS provides excellent

outcomes, relatively few have focused on older patients, and there are no reports of MVD in individuals aged >80 years. In this report, we describe HFS in patients over 80 years of age, in whom we performed MVD with excellent outcomes; points to be considered are discussed, along with a review of the literature.

Materials and Methods

Of the 210 patients who underwent MVD for facial spasms in our department over the past 4 years, 15 (7.1%) were over 80 years of age and were included (Table 1). Cases requiring revision were excluded. The mean patient age was 83.1 years (80-90); six were males, and nine were females. The affected area was the right side in seven patients and the left side in eight. Associated cochlear nerve symptoms such as hearing loss and tinnitus were observed in five patients (33.3%). Preoperative Botox was administered to ten (66.7 %) patients. The mean time from onset to surgery was 5.5 years (1.5-12.0 years). Hypertension was the most common concurrent medical condition, followed by hyperlipidemia, diabetes mellitus, and hyperuricemia (Table 2).

Mean age (years)	83.1 (80-90)
Sex (male : female)	6 : 9
Affected side (right : left)	7 : 8
Hearing disturbance, tinnitus	5 (33.3%)
Preoperative Botox treatment	10 (66.7%)
Mean period from onset to surgery (years)	5.5 (1.5-12.0)

Table 1: Summary of the cases.

Disorder	Number of the cases
Hypertension	12
Hyperlipidemia	9
Hyperuricemia	2
Diabetes mellitus	2
Myocardial infarction	1
Cerebral infarction	1
Renal failure	1
Liver dysfunction	1

Table 2: Medical history of the cases.

Preoperative 3D MR cisternogram/angiogram fusion images were obtained to identify the responsible vessels [1-3]. MVD was performed in the lateral recumbent position with a retrosigmoid craniotomy under continuous monitoring of the auditory brainstem response (ABR) [1]. Briefly, a linear skin incision (approximately 6 cm) was made in the posterior auricular region, and craniotomy was performed by exposing the edge of the sigmoid sinus. The dura mater was incised, and spinal fluid was aspirated from the cerebellar medullary cistern to slack the cerebellum. First, the arachnoid membrane around the lower cranial nerve was dissected and the root exit zone of the facial nerve was exposed. The responsible vessel was visualized and carefully moved and the facial nerve was decompressed. To prevent hearing loss as a postoperative complication, surgery was paused when prolongation of the fifth-wave latency of the intraoperative ABR was observed and resumed after latency improved. Postoperative evaluation was performed using the Japanese Society for Microvascular Decompression Surgery postoperative evaluation method for HFS [4]. When the surgical outcome was a complete resolution of symptoms, the efficacy of surgery (E) was designated as E-0; when moderate symptoms persisted postoperatively, the score was designated as E-2. When no complications were observed after surgery, the complication score (C) was C-0, whereas the score was C-2 if complications persisted. The total evaluation of the results (T) was determined by combining the E and C scores; for example, if E was 0 and C was C-0, the total evaluation was scored as T-0, which was considered excellent [4]. The mean postoperative follow-up period was 24 months (6-48 months).

Results and Discussion

Postoperative complications included transient facial paralysis in two patients, which resolved immediately within 1 week of surgery. Postoperative outcomes were favorable in all cases: E0 in 12 cases, E1 in three, as well as C015 in 12 cases for T0 and three cases for T1 with excellent (80%) and good (20%) results, respectively. The average operative time was 80 minutes (70-110 minutes) and blood loss was minimal in all patients. The responsible vessels were the anterior inferior cerebellar artery (AICA) in four cases and the posterior inferior cerebellar artery (PICA) in five; the vertebral artery and AICA or PICA were involved in six cases (40%), with the vertebral artery involved in a greater proportion of

cases. Nine patients underwent transposition, and six underwent interposition. Five patients (33.3%) had arteriosclerosis of the responsible vessels, for which careful manipulation was required. Patients who underwent interposition had severe arteriosclerosis in the responsible vessel, and transposition may have caused cerebral infarction. The mean postoperative hospital stay was 10.0 days (9-13 days) (Table 3).

Surgical time (min.)	80.0 (70-110)
Amount of blood loss	38 (20-100)
Offending vessel	AICA 4, PICA 5, VA+AICA or PICA 6
Procedure	Transposition 9, Interposition 6
Surgical results	Excellent 80%, good 20%
Permanent complication	none
Hospital stay (days)	10.0 (9-13)

Table 3: Surgical Results.

AICA: Anterior Inferior Cerebellar Artery; PICA: Posterior Inferior Cerebellar Artery; VA: Vertebral Artery

We previously investigated the usefulness of MVD for trigeminal neuralgia, a neurovascular compression syndrome similar to HFS, in elderly patients; we found that surgery should be considered because satisfactory results can be achieved, even in this age group [1]. In this study, we examined the usefulness of MVD in the treatment of HFS in older patients. MVD is the gold standard treatment for HFS worldwide [5-7], with many favorable results reported. However, whether surgery should be performed for older patients remains controversial. As was apparent in the current study, elderly patients have a higher perioperative risk because hypertension, stroke, diabetes, and other medical disorders are common. There are few published reports on the usefulness of MVD in older patients with HFS [8-10]; however, the definition of ”elderly” is not uniform, and is divided into individuals that are 60 [7], 65 [9], and 70 [10] years of age or elderly. There have been no reports on the efficacy of MVD in patients over 80 years of age. Previous reports on MVD in elderly patients with HFS have found favorable surgical outcomes and complication rates compared to those in younger patients [8-10].

The cerebellum tends to be more atrophic in elderly individuals than in the young, making it easier to reach the facial nerve and perform surgery [1,9]. Usually, CSF drainage in the first step of MVD minimizes pressure on the cerebellum as it approaches the facial nerve, preventing cerebellar damage. In elderly patients, CSF drainage should be minimized because excessive drainage with the atrophic cerebellum may lead to stretching of the eighth cranial nerve, resulting in hearing loss [1]. In several patients in our series, although prolonged intraoperative fifth wave latency was observed during the operation, manipulation was interrupted to allow latency to recover. Elderly patients may have preoperative hearing disorders, requiring greater intraoperative care than younger patients. It is necessary to focus on intraoperative ABR monitoring at all times during surgery [1,9]. In our patients, there were no permanent complications such as hearing disturbance, cerebral infarction, infection, or spinal fluid leakage.

Surgical findings in elderly individuals indicate that the responsible vessel is often the vertebral artery, which is often highly compressed [9]. In our case, the vertebral artery was involved in 40% of cases, with severe compression observed in seven patients (47%). There are also cases in which the arachnoid membrane becomes thinner with age and adheres more strongly to the cerebral blood vessels, making dissection difficult in some cases [9].

MVD is a minimally invasive procedure for elderly patients and is associated with a short operating time, minimal intraoperative blood loss, relatively short hospital stay, and few complications. As very good results were obtained in this patient series, surgical treatment should be considered, even in this age group. The final decision should be made based on preoperative evaluation of the patient’s general condition, when the medication is no longer effective, or when side effects are observed.

Conclusion

In patients with atherosclerosis of the responsible vessels, careful manipulation during MVD is required to avoid complications. In elderly patients with HFS (>80-year-old), surgical treatment should be considered based on the patient’s general condition.

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Conflict of Interest

The authors declare no conflicts of interest related to the publication of this study.

Ethical Approval

The Ethical Committee of the International University of Health and Welfare approved all procedures used in this study.

Submission Statement

This original manuscript has not been submitted elsewhere in part or entirety.

Bibliography

1. Onoda K., *et al*. "A Case of Nervus Intermedius Neuralgia". *World Neurosurgery* 137 (2020): 89-92.

2. Satoh T., *et al.* "Fusion imaging of three-dimensional magnetic resonance cisternograms and angiograms for the assessment of microvascular decompression in patients with hemifacial spasms". *Journal of Neurosurgery* 106.1 (2007): 82-89.

3. Satoh T., *et al*. "Preoperative simulation for microvascular decompression in patients with idiopathic trigeminal neuralgia: visualization with three-dimensional magnetic resonance cisternogram and angiogram fusion imaging". *Neurosurgery* 60.1 (2007): 104-113.

4. Kondo A., *et al*. "A proposal for standardized analysis of the results of microvascular decompression for trigeminal neuralgia and hemifacial spasm". *Acta Neurochirurgica* 154.5 (2012): 773-778.

5. Holste K., *et al*. "Spasm Freedom Following Microvascular Decompression for Hemifacial Spasm: Systematic Review and Meta-Analysis". *World Neurosurgery* 139 (2020): e383-e390.

6. Li J., *et al*. "The outcome of microvascular decompression for hemifacial spasm: a systematic review and meta-analysis". *Neurosurgical Review* 45.3 (2022): 2201-2210.

7. Sindou M and P Mercier. "Microvascular decompression for hemifacial spasm : Surgical techniques and intraoperative monitoring". *Neuro-Chirurgie* 64.2 (2018): 133-143.

8. Jeon CJ., *et al*. "The efficacy and safety of microvascular decompression for hemifacial spasm in elderly patients". *Journal of Korean Neurosurgical Society* 47.6 (2010): 442-445.

9. Youn J., *et al*. "Safety and effectiveness of microvascular decompression for the treatment of hemifacial spasm in the elderly". *European Neurology* 70.3-4 (2013): 165-171.

10. Zhao H., *et al*. "Hemifacial Spasm: Comparison of Results between Patients Older and Younger than 70 Years Operated on with Microvascular Decompression". *Journal of Neurological Surgery. Part A, Central European Neurosurgery* 83.2 (2022): 118-121.