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Case Report

Surgical management of coexisting trigeminal neuralgia and hemifacial spasm

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Abstract

Background: Coexisting hemifacial spasm (HFS) and trigeminal neuralgia (TN) without any mass lesion in the posterior fossa is a rare condition. Hence, the surgical strategy of coexisting HFS and TN has rarely been discussed.

Case Description: We present a rare case of coexisting HFS and TN without any mass lesion in posterior fossa having microvascular confliction of trigeminal nerve with superior cerebellar artery (SCA) and facial nerve with anterior inferior cerebellar artery (AICA). Single surgery was performed for both trigeminal nerve and facial nerve. Mobilization of vessels and placement of Teflon between the nerve and vessel relieved the symptoms immediately after the operation. We have reviewed the literature for cases with coexistent HFS and TN. The treatment strategy for such cases has been discussed. The surgical treatment has been demonstrated with a video.

Conclusion: A single surgery is a safe and effective option to treat coexistent HFS and TN due to microvascular confliction.

Key Words: Combined hyperactive syndrome of cranial nerves, decompression surgery, hemifacial spasm, trigeminus neuralgia

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INTRODUCTION

Combined hyperactive dysfunction syndrome (HDS) of cranial nerves is a rare condition. Taking all combined hyperactive cranial nerve syndromes together in about 3% of the cases more than one cranial nerve is involved.[2,11,21] Although clinical cases of coexisting hemifacial spasm (HFS) and trigeminal neuralgia (TN) have been reported in the literature, however, these cases were often associated with different pathologies including tumors of the posterior fossa, arachnoid cyst, cerebral arteriovenous malformations (AVM), and small posterior fossa including Chiari type I malformation.[4,5,10,13,18-20] In some cases, the shifted basilar or vertebral artery itself or indirectly by pushing the cranial nerves to come in contact with posterior inferior cerebellar artery (PICA), anterior inferior cerebellar artery (AICA), or superior cerebellar artery (SCA) caused the combined HFS and TN.[7,12,15] The associated etiologies for vascular compression syndromes are evident in coexisting cases of hyperactive dysfunction syndromes than in single HDS.[11] The cases reported in different case series

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report an association of these cases with the presence of hypertension or atherosclerotic changes in the posterior circulation arteries.

We report a rare case of coexisting HFS and TN, where two separate vessels compress two different nerves without any vertebrobasilar anomaly or other pathologies such as tumor, aneurysm, or AVM. A single surgery was performed that completely relieved both HFS and TN.

CASE HISTORY

We present a case of 48-year-old female with two years history of right-sided TN in V2 and hemifacial spasm. The HFS was limited around the eye. The symptoms of electric pain in V2 were provoked by chewing, speaking, etc., reflecting the typical TN. After the failure of medical treatment, brain MRI scan was performed that showed no mass lesions. The MRI scan showed a clear conflict of SCA with TN and AICA with facial nerve [Figure 1a-c]. Because the failure of medical treatment indication to decompress microvascular confliction of both vessels was justified.

A literature review was performed using PubMed and Ovid Medline. We searched treatment options for cases with coexisting HFS and TN. Key words, "trigeminal neuralgia" and "hemifacial spasm" showed 320 published articles. Adding key word "microvascular decompression (MVD)" yielded 175 articles, 30 case reports, one clinical trial, and 24 review articles. After a critical review of these articles, 21 articles with coexisting HFS and TN treated surgically or with radiosurgery were considered relevant and had been discussed in the manuscript.

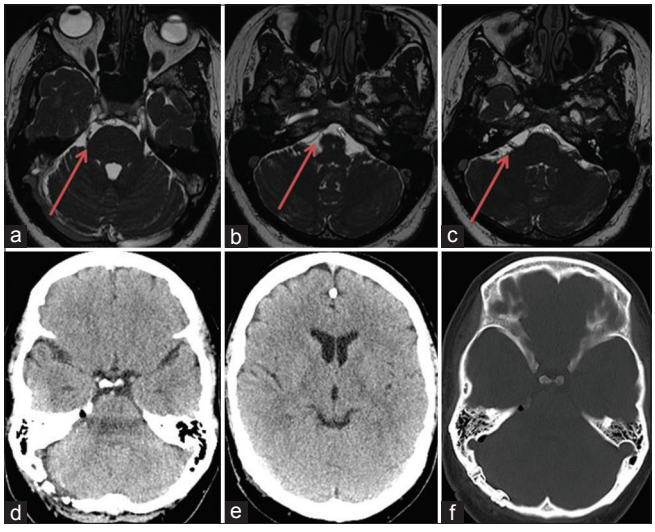

Figure 1: MRI images (a-c) showing microvascular confliction of SCA with trigeminal nerve (a) and AICA with facial nerve (b and c). Postoperative cranial CT scan is showing no complications (d-f)

SURGICAL MICROVASCULAR DECOMPRESSION

Operative findings

We planned to treat both pathologies in a single surgery. During surgery, normal cisternal anatomy was found. No obvious anatomical anomaly in the size of the posterior fossa. After opening the cisternmagna, we first identified TN and found an arterial confliction with branches of superior cerebellar artery [Figure 1a]. The MVD was performed as explained in Video 1. In the second step, facial nerve was identified and an obvious confliction with AICA branches was found [Figure 2]. MVD was performed as described in Video 1.

Postoperative outcome

Postoperatively, both HFS as well the TN were completely resolved. Post operative CT scan showed no complications [Figure 1d-f]. Patient was discharged after four days of operation. In a short time follow-up of 6 months, the patient is completely free of symptoms.

DISCUSSION

The occurrence of TN, HFS, and glossopharyngeal neuralgia in combination is termed hyperactive dysfunction syndromes. The combination of HFS and TN also termed as painful tic convulsive is a rare condition.[2,11,16,21-23] Very often posterior fossa mass lesions including tumors and AVM in posterior circulation are found in patients with combined HFS and TN.[4,10,18,19] In other cases, conditions such as dolichoectasia of vertebrobasilar arteries, small posterior fossa, and Chiari type I malformation have been reported.[12,13] There have been few cases reported in different case series or case reports with microvascular confliction causing combined HFS and TN without above pathologies.[1,2,6,8,9,11,14,16,21-23]

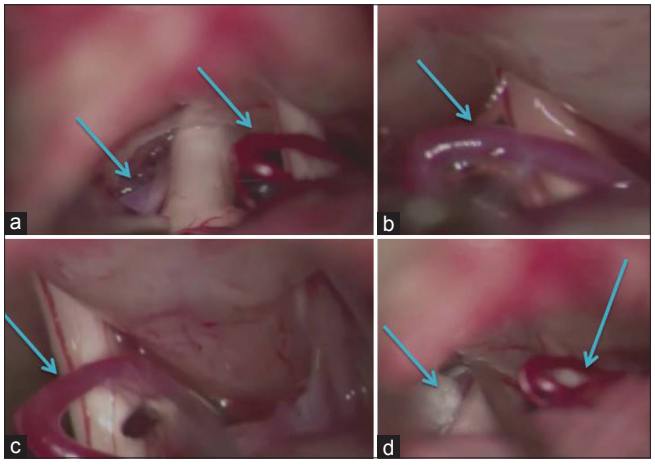

Figure 2: Intraoperative images are showing avascular conflict of SCA with trigeminal nerve (left) and AICA with facial (right) nerve (a), reposition of AICA (a and b), and placement of Teflon between SCA and trigeminal nerve (c and d)

Case series from literature have reported an association with age and female sex.[2,11,21] Old age may lead to progressive atherosclerotic changes in vascular system leading to elongation of vessels leading to contact with cranial nerves or nerve root entry zone supporting this association.[21] The dominance of female sex is another interesting association that has been repeatedly reported in the literature.[2,11,21,23] Case-controlled radiological volumetric MRI study showed lower cerebrospinal fluid (CSF) volume in patients with HFS as compared to controls. Interestingly, lower CSF volume was predominantly found in females.[3] The present case was also a female that is in line with the present literature.

Microsurgical decompression in cases with combined HFS and TN has shown a satisfactory outcome that is comparable to the MVD in single nerve compression syndrome. Although gamma knife radiosurgery as an alternative option in concurrent HFS and TN due to vertebrobasilar, dolichoectasia has been reported.[12] However, the result is not encouraging. A two-step surgery with dissection of arachnoid tissue around the nerve root entry zone in first surgery and placement of Teflon fragment in the second surgery in a case of painful tic convulsive has been reported with a successful relief of symptoms after the second surgery.[17] We, however, performed a single surgery with a successful relief of both HFS and TN. In most of the reported cases in the literature, the authors performed a single surgery with a very low recurrence rate and complications with satisfactory relief of symptoms. Taking all together, the evidence from literature and our case report support the surgical treatment with dissection of arachnoid tissue and placement of Teflon in a single surgery in cases with coexisting HFS and TN.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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