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SPONTANEOUS REMISSION OF HEMIFACIAL SPASM AFTER A TOOTH IMPLANTATION

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Spontaneous remission of hemifacial spasm after a tooth implantation
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Hemifacial spasm was developed on the left face of 46-year old man. He got botox injection on his left hemiface intermittently with fair response. After one year of botox therapy, he came along to have molar tooth implantation at left upper jaw and the hemifacial spasm subsided immediately without further botox therapy.

Keywords: *Hemifacial spasm; Botox therapy;Tooth implantation.*

Тіс имплантациясынан кейінгі гемифаксиялық спазмның өздігінен ремиссиясы
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46 жасар ер адамның сол жақ бетінде гемифаксиялық спазм жайылды. Пациент сол жақ жарты шарына үзілістермен ботокс екпесін жасатып жақсы нәтиже алды. Бір жыл ботокспен емдеуден кейін оның сол жақ жоғарғы жағына молярлы тіс имплантациясы жасалды, содан кейін ботокс емін жалғастырмай-ақ, бірден гемифаксиялық спазм тоқтады.

Негізгі сөздер: *гемифаксиялық спазм, ботокс терапиясы, тіс имплантациясы.*

Спонтанная ремиссия гемифациального спазма после имплантации зуба
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У 46-летнего мужчины развился гемифациальный спазм на левой стороне лица. Пациент получил инъекцию ботокса на левое полушарие с перерывами и результат был хорошим. После одного года терапии ботоксом ему была проведена имплантация молярного зуба в левую верхнюю челюсть, и гемифациальный спазм сразу же прекратился без дальнейшей терапии ботоксом.

Ключевые слова: *гемифациальный спазм, ботокс терапия, зубная имплантация.*

Hemifacial spasm is characterized by abnormal involuntary contractions of the facial muscles innervated by the facial nerve. It is usually unilateral and sometimes develop bilaterally. Irritation of the transition zone between central myelin and peripheral myelin near root-exit zone has been suggested for the mechanism [1, 2]. It impacts a patient's appearance and may persist during sleep, which sometimes causes insomnia. Spontaneous remissions are infrequent, and many patients need continuous botox treatment for transient symptom relief or surgical decompression [3]. We report a spontaneous remission of hemifacial spasm after a tooth implantation and sought possible mechanism of the remission.

Case

A 46-year old man visited our movement clinic complaining on the left facial spasm. The left hemifacial spasm was developed five months ago before the first visit without any specific event. The clonic contraction of facial muscles was painless. It developed in the orbicularis oculi and slowly spread to other muscles of the left hemiface. The symptom was worsened by emotional stress and voluntary movements of facial muscles. At the moment he had mild discomfort in the left face, accompanied with irregular muscular twitching. He had no sleep problem and mood symptoms. He was working in a governmental of-

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fice and getting well. He did not have any specific medical illness. The blood pressure and pulse rate were normal. Physical examination showed no abnormal signs. Neurological examination showed no other abnormal findings except left hemifacial spasm. His brain MRI showed a small old cerebral infarction in the posterior limb of the left internal capsule. There also was vascular compression of left facial nerve roots and areas around left internal auditory canals by the left anterior inferior cerebellar artery. (figure 1) Clonazepam 1mg was prescribed, and he showed minimal improvement after one month of continuous medication. The symptom was worsened when he hold medication for more than several days by himself. After two years of clonazepam treatment with the inefficient response he needed more effective therapy. Then he was started botox therapy by 20 units of botox injection in left hemiface. The effect of botox therapy was satisfiable and continued for six months. After one year of botox therapy, he took teeth implantations for dental caries. (figure 2) The implantations were done one by one. When he had tooth base implantation for the left upper first molar tooth, his hemifacial spasm subsided immediately after the implantation procedure. The remission of hemifacial spasm after the dental management persisted without further clonazepam medication or botox therapy.

Discussion

Hemifacial spam has several explanations for the pathophysiology. The basic idea is that the facial nerve is overstimulated and hyperexcitation of the nerve develops the symptoms. The most important known direct pathology is vascular compression of facial nerve root near the entrance from pons [2]. Shortly, the pathophysiology is irritation of the facial nerve.

In our case, changes of neuronal network may work for the remission. Trigeminal nerve ganglion is near the facial nerve ganglion. The trigeminal nerve is connected to the facial nerve in pons via the main trigeminal nucleus and in medullar by spinal trigeminal nucleus as we know from the blink reflex [4, 5]. Usually the blink reflex test uses the ophthalmic branch of the trigeminal nerve with electrical stimulation or corneal touch. Therefore, we thought a kind of trigeminal nerve afferent stimulation which developed by tooth transplantation developed and transferred to the facial nerve or the compressing vessel that such healing developed. There also could be a pain response and electrical overstimulation; When the dentist began to implant a tooth, local anaesthesia by lidocaine and epinephrine was injected around the palatal mucoperiosteum of maxillary molars. The anaesthesia itself could affect maxillary nerve root by a direct effect on the greater palatine nerve. It could decrease the state of irritation of facial nerve root near it. The other mechanism could be associated with the strong vasoconstrictive effect of epinephrine itself. It affects perimolar tissues to reduce bleeding during the procedure, but it possibly spread by perimolar small vessels

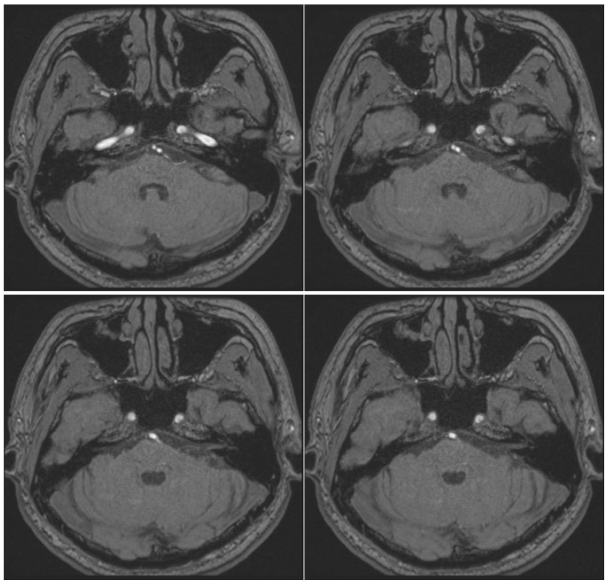

Figure 1. Left hemifacial spasm caused by an AICA loop in a 48-year-old-man. Axial brain MRI (0.6-mm thin sections) shows contact between an AICA loop and the presumed transition zone of left facial nerve.

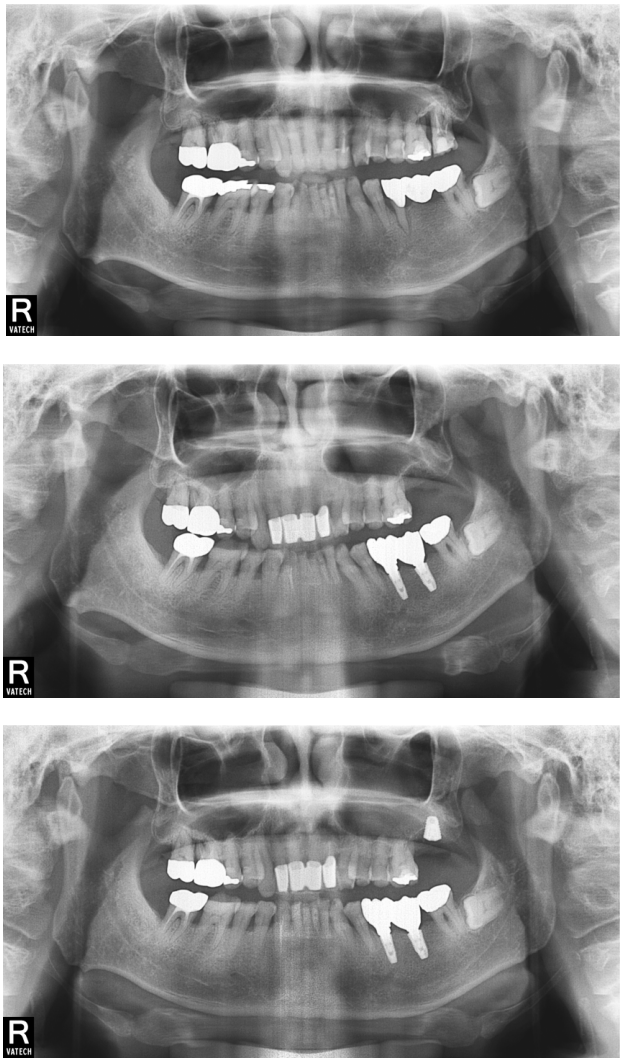

Figure 2.

The upper figure shows dental shapes on July 3rd of 2014 and the middle figure shows dental shapes on November 25th of 2016, and the lower figure shows dental shapes on April 29th of 2017

or direct tissue perfusion to the compressing vessel, AICA. Therefore, it could constrict AICA and reduce compressing power of the vessel on the facial nerve that the hemifacial spasm subsided. Moreover, pain developed during the implantation may release some kinds of pain suppressing endogenous materials, such as endorphins or dynorphins, etc [6]. These pain suppressants may affect the hyperstimulated state of the facial nerve root to stop hemifacial spasm. Lastly, when a strong stimulation on distal trigeminal afferent nerve treated same side hemifacial spasm, it could be used to treat hemifacial spasm. Strong electrical stimulation using a machine for nerve conduction study or injection of a local anaesthetic to mucoperiosteum can be tried in a novel clinical trial. Acupuncture also can be used to treat this illness.

We report a patient with hemifacial spasm who got remission after same side molar implantation. Further electrophysiologic studies and more case studies should be needed to clarify such unexpected healing and future therapeutic approaches.

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