Painful Trigeminal Neuropathy Attributed to a Space-occupying Lesion Presenting as a Toothache: A Report of 4 Cases

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Abstract

Painful trigeminal neuropathy attributed to a space-occupying lesion (code 13.1.2.5 in the *International Classification of Headache Disorders, 3rd edition* [beta version]) is an orofacial pain condition that has characteristics of classical trigeminal neuralgia but is caused by a space-occupying lesion. We present 4 cases of intracranial lesions mimicking odontogenic pain as follows: case 1, a 61-year-old woman presented with a chief complaint of aching soreness in the right mandibular molar area for 1 year; case 2, a 59-year-old man presented with severe pain in the left maxillary and mandibular molars; case 3, a 72-year-old man presented with a chief complaint of facial shock–like pain on the left side; and case 4, a 75-year-old man presented with a chief complaint of paroxysmal pain and numbness in the buccal gingiva of the right mandibular molar region. Cases 1 and 2 had trigeminal neuralgia, which had previously been incorrectly attributed to osteoma and maxillary sinus retention cyst, respectively, and resulted in inappropriate dental surgical procedures. All patients subsequently underwent magnetic resonance imaging, and the results were consistent with intracranial disease. Magnetic resonance images revealed acoustic neuromas in the cerebellopontine angle in cases 1, 2, and 4 and a small meningioma near the entry to the left Meckel cave in case 3. Cases 1, 3, and 4 had these lesions removed; after which, their pain resolved. Before dental treatment, dental practitioners should focus not only on dental imaging but also on the patient's medical history and pain characteristics. *(J Endod 2017;■:1–6)*

Key Words

Acoustic neuromas, *International Classification of Headache Disorders, 3rd edition* (beta version), painful trigeminal neuropathy, space-occupying lesion, trigeminal neuralgia

Significance

The patient with orofacial pain caused by a space-occupying lesion may have a concomitant dental disease. Dental practitioners should focus not only on dental imaging but also on the patient's medical history and pain characteristics.

Nonodontogenic tooth pain is one of the most challenging clinical presentations for dentists. Orofacial neuropathic pain is not rare; thus, general dentists will undoubtedly encounter it in their patients (1, 2). Orofacial neuropathic pain comprises temporomandibular disorders and disorders of the musculoskeletal structures (eg, masticatory muscles and cervical spine); neuropathic pains, which include episodic (eg, trigeminal neuralgia [TN]) and continuous (eg, peripheral/centralized mediated) pain; and neurovascular disorders (eg, migraine) (3). Symptoms of TN may mimic tooth pain, which could result in inappropriate and irreversible treatment. Patients with orofacial neuropathic pain may consult multiple clinicians and receive excessive treatment before their condition is correctly diagnosed (4). Therefore, dentists need to be familiar with the pathophysiology, presentation, diagnosis, and treatment of orofacial neuropathic pain.

Some of the many orofacial neuropathic pain disorders are caused by direct compression of the trigeminal nerve. TN is the term generally used to define short, repeated attacks of sharp, stabbing pain in 1 or more branches of the trigeminal nerve. Other less frequent causes include posterior fossa tumors, cerebral aneurysms, arteriovenous malformations, and multiple sclerosis plaques (5–8). In the *International Classification of Headache Disorders, 3rd edition* (beta version) (ICHD-3 beta), TN (code, 13.1) is classified as classical TN (13.1.1) or painful trigeminal neuropathy (13.1.2). Classical TN includes classical TN, purely paroxysmal (13.1.1.1), and classical TN with concomitant persistent facial pain (13.1.1.2) (9). Painful trigeminal neuropathy (13.1.2) includes painful trigeminal neuropathy attributed to acute herpes zoster (13.1.2.1), postherpetic trigeminal neuropathy, painful posttraumatic trigeminal neuropathy (13.1.2.2), painful trigeminal neuropathy attributed to multiple sclerosis plaque (13.1.2.3), painful trigeminal neuropathy attributed to a space-occupying lesion (13.1.2.4), and painful trigeminal neuropathy attributed to other disorders (13.1.2.5) (9) (Table 1). In this article, we present 4 cases of painful trigeminal neuropathy attributed to space-occupying lesions in patients presenting with toothache.

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Case Presentation

Case 1

A 61-year-old woman presented to the Department of Periodontology at Nihon University, Tokyo, Japan, with a chief complaint of aching soreness of a 1-year duration in the right mandibular molar area. A periodontist had previously diagnosed "cracked tooth syndrome" (Fig. 1*A*). Eleven months after that diagnosis, the lower right first molar was extracted, but the pain did not subside. The periodontist then considered a radiopaque lesion apical to the site of the lower right first molar to be the cause of pain. The mandibular neoplasm was removed at the Department of Oral and Maxillofacial Surgery because of the possibility of infection (Fig. 1*B*). However, her symptoms were again unchanged. She was then referred to the Department of Endodontics at Nihon University, and root canal treatment was repeatedly performed for the lower right second molar over a period of 3 months (Fig. 1*C*). The patient subsequently complained of hearing loss, and pain quality varied from a dull ache to a TN-like pain. A clinical diagnosis of TN was made, and she was started on oral carbamazepine, 100 mg twice daily, which resulted in some relief of symptoms. Magnetic resonance images were obtained to rule out vascular compression over the trigeminal root and revealed a well-defined intensely enhancing mass involving the right cerebral pontine angle region and the right fifth cranial nerve complex (Fig. 1*D*). The patient was referred to a neurosurgeon for treatment. The tumor was surgically removed at Chiba Tokushukai Hospital, Funabashi, Japan, under general anesthesia. Histopathological examination confirmed acoustic neuroma. Facial pain disappeared immediately after the tumor was removed. Facial palsy, sensory deficits, and hearing loss were noted postoperatively.

Case 2

A 59-year-old man presented with severe pain in the left maxillary and mandibular molars. Approximately 2 months before seeking treatment at Nihon University Dental Hospital, the patient had consulted a dentist in China, who noted a lesion in the left maxillary sinus and diagnosed a maxillary sinus retention cyst. Extraction of the upper left first and second molars was performed in a dental office by a general dentist. However, the pain remained severe after the extractions. The patient presented for treatment at Nihon University Hospital, and a neurologic examination revealed lancinating pain persisting for 30 to 40 seconds that was provoked by light touch to the buccal gingiva of the left mandibular molar region. Further neurologic assessment revealed no other abnormalities.

A panoramic radiograph and computed tomographic image revealed a dome-shaped, well-delineated, radiopaque lesion on the intact floor of the maxillary sinus (Fig. 2*A* and *B*). Magnetic resonance imaging (MRI) showed a cranially extended acoustic neuroma–like tumor that was in contact with the left trigeminal nerve (Fig. 2*C* and *D*). The patient was referred to neurosurgeons in China, and his subsequent clinical course is unknown.

Case 3

A 72-year-old man presented with a chief complaint of facial electric shock–like pain on the left side. Approximately 1 month before presenting at our orofacial pain clinic, the patient had seen a dentist for electric shock–like pain in the left infraorbital region. He was treated for dentinal hypersensitivity without success. At Nihon University Dental Hospital, neurologic examination revealed lancinating pain persisting for 20 to 30 seconds that was provoked by a light touch to the left angle of the mandible. Further neurologic assessment revealed no other abnormalities. MRI revealed a small meningioma near the entry of the left Meckel cave, which compressed the left fifth cranial nerve complex (Fig. 3*A* and *B*). The patient was referred to a neurosurgeon for treatment, and the tumor was surgically removed at Chiba Tokushukai Hospital under general anesthesia. Histologic findings were consistent with a diagnosis of meningioma. The lancinating pain disappeared postoperatively, and there has been no recurrence of pain for 2 years.

Case 4

A 75-year-old man presented with a chief complaint of paroxysmal pain in the right lower premolar and numbness of the buccal gingiva in the right mandibular molar region. He had previously sought treatment for hearing loss and received a diagnosis of acoustic neuroma from an otolaryngologist 10 years before but declined resection of the tumor. Approximately 10 days before presenting at our orofacial pain clinic, he developed sharp, lancinating pain and numbness of the right lower molar region. The pain was localized at the distribution of the right mandibular branch of the trigeminal nerve and persisted for 10 seconds per episode. Pain was provoked by eating, face washing, and tooth brushing. Physical examination revealed sensory loss to light touch and pinprick at the right lower molar region and hearing loss in the right ear. A panoramic radiograph showed absence of the right

TABLE 1. Trigeminal Neuralgia Subtypes And Descriptions

	Cause	Trigger	Duration	Quality	Intensity
Classical trigeminal neuropathy (13.1.1)					
Classical TN, purely paroxysmal (13.1.1.1)	Compression of trigeminal nerve by blood vessel	Innocuous stimuli, sometimes spontaneous	Fraction of a second to 2 minutes	Electric shock-like, shooting, stabbing, or sharp	Severe
Classical TN with concomitant persistent facial pain (13.1.1.2)	Compression of trigeminal nerve by blood vessel although less commonly than purely paroxysmal variant	Paroxysms usually by innocuous stimuli, paroxysms sometimes spontaneous	Paroxysms: fraction of a second to 2 minutes. Background pain: persistent	Paroxysms: electric shock–like, shooting, stabbing, or sharp Background pain: aching, burning, tingling	Moderate
Painful trigeminal neuropathy (13.1.2)					
Painful trigeminal neuropathy attributed to space-occupying lesion (13.1.2.5)	Contact between affected trigeminal nerve and space-occupying lesion		Paroxysms: fraction of a second to 2 minutes. Background pain: persistent	Paroxysms: electric shock–like, shooting, stabbing, or sharp Background pain: aching, burning, tingling	Moderate