

Trigeminal Neuralgia as Nonodontogenic Toothache: A Case Report

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ABSTRACT

Toothaches typically originate from the odontogenic structures such as dentin, pulp and periodontium. Toothaches which have an odontogenic origin are managed effectively in the dental clinic; however, toothaches with a nonodontogenic origin are often difficult to identify. This article presents a case of trigeminal neuralgia that was misdiagnosed as pain of odontogenic origin and initially treated surgically and endodontically, despite no abnormality detected in the physical examination or X-ray. The aim of this article is to present a case of trigeminal neuralgia that may mimic odontogenic toothache. This case highlights the importance of having thorough knowledge and the appropriate clinical skills to differentiate both odontogenic and nonodontogenic toothaches, as well as the need for careful diagnosis before undertaking any treatment.

KEYWORDS: Nonodontogenic toothache, trigeminal neuralgia, orofacial pain

INTRODUCTION

Toothache is the most common complaint at dental clinics [1]. Toothaches which have an odontogenic origin are managed effectively in the dental clinic; however, toothaches with a nonodontogenic origin are often difficult to identify [2, 3]. In many cases, a diagnostic dilemma is frequently encountered in clinical practice. This article presents a case of nonodontogenic pain that may mimics toothache and discusses the process of diagnosing nonodontogenic pain.

CASE PRESENTATION

A 70-year-old female consulted a dentist regarding a history of pain in the right lower side of her face for the past two years. The pain was sharply triggered by movement of the mouth whilst eating. The patient reported an intermittent pain attack usually lasting for a few seconds. The patient had been seen by five dentists, including a specialist, without any success. Due to her complaint of pain, the patient has had the removal of lower right implants and an extraction of the upper-right

molars after root canal treatments. However, she still complained of pain. She was then referred for an evaluation of temporomandibular disorders (TMD).

The intraoral examination revealed no obvious pathology in the patient's mouth. The physical examination for TMD, including cranial nerve examination, revealed no abnormalities with regards to motor or sensory function, or of masticatory muscles or temporomandibular joints (TMJs).

An orthopantomography (Figure 1) revealed no obvious pathology in her jaw region, while the previous MRI evaluation with contrast also revealed no abnormality in the intracranial structures. Analgesic blocking of the right inferior alveolar nerve arrested the triggering of pain for the duration of the anaesthesia. Upon further analysing of the patient's history, it appeared that the pain would relapse every six months with a remission period, although the previous MRI evaluation with contrast had revealed no abnormality to differentiate between symptoms. Characteristics of the pain episodes and the associated symptoms were



consistent with the trigeminal neuralgia (TN) diagnostic criteria of the International Classification of Headache Disorders (ICHD-3) published by the International Headache Society (IHS: Table 1) [4].

During the first visit, a medication trial of Carbamazepine 100 mg, bid (200 mg/day) was administered to the patient, which had finally reduced her pain. This regimen was followed up initially after one week to increase the dosage.



Figure 1 Orthopantomography of the patient

Table 1 Diagnostic criteria of trigeminal neuralgia (TN) as in the International Classification of Headache Disorders (ICHD-3) by the International Headache Society (IHS) [4]

Recurrent paroxysms of unilateral facial pain in the distribution(s) of one or more divisions of the trigeminal nerve, with no radiation beyond, and fulfilling criteria B and C.

- | | |
|---|--|
| A | Pain has all the following characteristics: <ol style="list-style-type: none"> 1. lasting from a fraction of a second to 2 minutes 2. severe intensity 3. electric shock-like, shooting, stabbing or sharp in quality |
| B | Precipitated by innocuous stimuli within the affected trigeminal distribution |
| C | Not better accounted for by another ICHD-3 diagnosis. |

Notes:

1. In a few patients, pain may radiate to another division, but it remains within the trigeminal dermatomes.
2. Duration can change over time, with paroxysms becoming more prolonged. A minority of patients will report attacks predominantly lasting for >2 minutes.
3. Pain may become more severe over time.
4. Some attacks may be, or appear to be, spontaneous, but there must be a history or finding of pain provoked by innocuous stimuli to meet this criterion. Ideally, the examining clinician should attempt to confirm the history by replicating the triggering phenomenon. However, this may not always be possible because of the patient's refusal, awkward anatomical location of the trigger and/or other factors.

DISCUSSION

Orofacial pain is a term used to describe dysfunction or pain experienced in the head, face and neck region, including the mouth. The most frequent cause of pain in the orofacial region is odontogenic (dental) pain [1]; however, nonodontogenic pain can also affect the orofacial region and occasionally mimic dental pain (Figure 2).

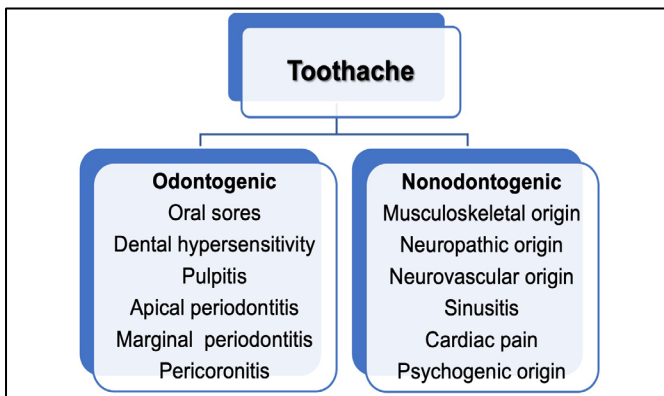


Figure 2 Odontogenic vs Nonodontogenic pain

An odontogenic toothache is a toothache of dental origin (Figure 2). Such odontogenic pains are usually managed effectively by the dentist. A nonodontogenic toothache is a toothache of non-dental origin, in which multiple organs could be the source of pain (Figure 2). Lipton et al. [1] reported that 22% of Americans had experienced orofacial pain in a 6-month, of which the most common types of pain were toothache, jaw pain and face pain. Therefore, it could be described that an effective rule to follow in diagnosing orofacial pain is to first rule out dental pain then TMD pain and other facial pain disorders.

Once an odontogenic origin of the pain has been ruled out, the next step in diagnosis is to question whether or not the pain is of dental origin. Functional disorders of the musculoskeletal system, such as TMD, are the primary the source of pain besides those of odontogenic origin. TMD is characterised by pain and dysfunction in the masticatory muscles and/or TMJs [5, 6]. A physical examination for TMD should be comprehensive and performed to locate the source of pain and identify any dysfunction in the masticatory muscles and/or TMJs. The examination may include the general area of the head and neck, TMJ, muscle, cervical screening and intraoral evaluation [7].

However, the current case found no abnormalities of the masticatory muscles or TMJs in the comprehensive physical examination for TMD. In this case, pain was initially episodic but may have become continuous in the previous two years as a low-grade background pain that mimicked the signs and symptoms of TMD-related musculoskeletal pain [8]. Once an odontogenic and TMD pain have been ruled out, the next step in diagnosis is to eliminate other facial pain disorders, such as neuropathic pain, as the primary source of pain (Figure 2).

Neuropathic pain is categorised as either episodic or continuous [9]. In episodic neuropathic pain, there are often refractory periods between attacks, which can be followed by a remission period of several weeks, months or years. In contrast, continuous neuropathic pain consists of unremitting low-grade pain with no periods of complete remission, also known as painful trigeminal neuropathy [4].

The key to diagnosing neuropathic pain is based on an accurate clinical history; however, the patient's complaints of pain had some of the hallmarks of classical TN (Table 1) [4]. Clinical cases of TN have been classified into two groups: namely, classical (idiopathic) and secondary (symptomatic). TN is a relatively uncommon disease with an annual incidence in the United States of 4:100,000 per year. The peak incidence of classical TN occurs between the ages of 50-70, more often in women than in men [8]. About 50% of cases consist of trigger zones, which are usually located in the perioral or intraoral region and can include the teeth [7]. In these patients, a painful episode may be triggered by light contact during normal activities such as eating, drinking, talking and tooth brushing, which often motivates them to consult a dentist. Diagnostic injections are often used to differentiate between the site of pain and the source of pain [10]; for cases of TN in which trigger zones are involved, local anaesthetic blocking of those areas will prevent the pain attacks [11].

Recent studies recommend that all patients with classical TN should be treated initially with medication. Patients with TN do not respond to conventional analgesic drugs and do not show any significant placebo response. Initially, almost all patients (80-90%) with TN respond to carbamazepine, while some clinicians

use this response as a diagnostic criterion. The starting dose of carbamazepine should be 100-200 mg/day and slowly increased until the pain disappears or the patient experiences significant side effects such as drowsiness, decreased mental acuity, dizziness or rash [8]. In addition, we can now predict which patients exposed to carbamazepine are more likely to develop adverse and potentially lethal skin reactions by testing the *HLA* allele *B*1502* as a marker for carbamazepine-induced Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) [12].

CONCLUSION

There are many sources that potentially produce pain in the orofacial structures, all of which require specific treatments. Persistent pain after dental procedures can thus challenge the diagnostic ability of the clinician [13]. Therefore, a standard rule to follow in diagnosing orofacial pain has been proposed, as illustrated in this case.

Conflicts of Interest

Authors declare none.

Author's Contribution

The author approved the final version of the manuscript submitted for publication and take responsibility for the statements in the article.

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