

ORIGINAL ARTICLE

ASSOCIATION BETWEEN TRIGEMINAL NEURALGIA AND UNNECESSARY TOOTH EXTRACTION

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Background: Trigeminal neuralgia is a very painful condition which is presented as severe pain corresponding to spastic shock. This is caused by trigeminal nerve's vascular compression at root entry zone. The pain is induced due to ipsilateral neurovascular conflict. In spite of the condition being known since centuries, it still continues to frustrate the clinician and its pathogenesis remains as enigma to the medical profession. It is very common for these patients to undergo unnecessary dental extraction without any relief in pain. This study was conducted to assess the association between trigeminal neuralgia and unnecessary tooth extraction. **Methods:** This was a cross-sectional study conducted between January 2017 and July 2019 in the Department of Dentistry of Ayub Teaching Hospital, Abbottabad. A total of fifty-three cases with Trigeminal neuralgia were included. All the patients were evaluated by history, clinical examination and local anaesthetic injection. **Results:** Fifty-three Trigeminal neuralgia cases were enrolled in this study; out of which 22 cases (41.5%) were males and 31 cases (58.5%) were females. Mean age of all the patients was 53.90 years. Twenty-nine patients (54.7%) had their right side involved, while the left side was involved in 23 patients (43.4%). In only one case (1.9%) there was bilateral involvement. Regarding tooth extraction unnecessary extraction were reported by 25 (47.1%) patients before they were diagnosed to have trigeminal neuralgia. The Maxillary first Premolar was the most common tooth extracted. **Conclusion:** Trigeminal neuralgia is one of the most severe painful condition of the maxillofacial region which can confuse the patient and the Dentist with toothache. Patient should be evaluated in detail to rule out trigeminal Neuralgia before tooth extraction.

Keywords: Trigeminal neuralgia; Toothache; Tooth extraction

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INTRODUCTION

The neuropathic pain that arises from the impaired transmission in the facial distribution of trigeminal nerve is referred as Trigeminal Neuralgia.¹ Trigeminal neuralgia is an extremely painful condition of the face characterized by paroxysmal shock like pain experienced in the innervated area of one or more branches of trigeminal nerve.² It is a truly agonizing condition in which the patient may clutch the hand over the face and experience severe, lancinating pain associated with spasmodic contractions of the facial muscles during attack, a feature that led to the term "Tic Douloureux" (Painful Jerking).³

The disorder has been reported for several hundred years in the literature.⁴ It has the reputation of being one of the most painful conditions a human can experience.⁵ The debilitating pain can directly or indirectly interfere with the patient's life with fear of recurrence.⁶ Quality of life gets severely compromised with this condition. Depression is most common outcome and patients have been reported to resort to suicides to get rid of the pain.⁷

The unilateral pain distribution follows the sensory innervation of the Trigeminal nerve. This pain radiates typically to maxillary division or mandibular division of fifth cranial nerve. Occasionally both divisions are affected. To eliminate other Differential Diagnoses⁸, radiological investigations like physical examinations and MRI Brain are used.

The pain is usually induced by homolateral stimulation of trigger zone. On neurological examination of motor or sensory functions, one can only appreciate little to no deficits. During the night, pain occurs less frequently. Thus, the patient is able to sleep and can get rest and relief from the pain. When the pain starts, the episodes may be sporadic with long spells of remission in between. As the pain progress, bouts of pain become longer in duration and the period of remission between the bouts gets shorter.⁹

Trigeminal neuralgia has been classified by The International Headache Society as primary and secondary Trigeminal neuralgia.¹⁰ The idiopathic or primary variant does not have a clear cause. Whereas, symptomatic or secondary Trigeminal neuralgia is

linked to multiple sclerosis, tumours and neurovascular compression.¹¹

Although TN is an uncommon disease, it is the most frequent occurring type of facial neuralgic pain.¹² Its incidence is about 75 times greater than that of the glossopharyngeal neuralgia.¹³ There is positive family history in 5% of the cases with TN. 5% of the patients experience bilateral sequential pain.¹⁴

In spite of the condition being known since centuries, it still continues to frustrate the clinician and its pathogenesis remains as enigma to the medical profession. Multiple views have been hypothesized regarding its aetiology, but confusion and simultaneously opting for many different therapies in an effort to treat this ongoing condition still exists.³ Patients with trigeminal neuralgia are known to visit dentists and quacks and undergo unnecessary tooth extractions. For this reason, the present study was aimed to find any association between the undiagnosed cases of trigeminal neuralgia and unnecessary tooth extraction, before the commencement of drug therapy or surgery so that the unnecessary dental extractions are avoided.

MATERIAL AND METHODS

A descriptive cross-sectional study was conducted from January 2017 to July 2019 in Department of Dentistry, Ayub Teaching Hospital, Abbottabad. A total of 53 patients were recruited for the study through non probability consecutive sampling.

All the patients presenting with the typical clinical features of Trigeminal neuralgia, whether known or newly diagnosed cases, were included in this study. There informed consent was taken. Tooth extraction history was taken and patient were examined for tooth extracted site and quadrant. The history of pain and associated tooth extraction was compared whether it was on the same side or not. Also, the patients were inquired about whether there was any relief in pain after tooth extraction; and whether they have undergone any further dental extraction for the relief of pain.

Our diagnosis was based on the history, clinical examination and control of pain by carbamazepine. In selective cases, where the clinical features were not much diagnostic, the orthopantomographs and paranasal sinus radiographs were performed for excluding local pathologies other than TN. The branch of the trigeminal nerve recognized was confirmed with diagnostic local anaesthetic block injection using 2% lignocaine with 1:100000 adrenaline solutions in all the cases. The data was entered into SPSS v.20. Mean and standard deviation were calculated for age. Male and female ratio was calculated for the gender. Descriptive statistics were used to

calculate frequency (%) of the affected branch/division in TN.

RESULTS

This study enrolled 53 TN patients, of which 22 cases (41.5%) were males and 31 cases (58.5%) were females. Mean age of all the patients was 53.90 years. The right side was affected in 29 patients (54.7%), while the left side of the face was affected in 23 patients (43.4%). In only one case (1.9%) there was bilateral involvement. Regarding tooth extraction unnecessary extraction were reported by 25 (47.1%) patients before they were diagnosed to have trigeminal neuralgia. The right Maxillary first pre molar was the most common tooth extracted followed by left first pre molar and the right Mandibular 2nd pre molar, correlating with the site of the trigeminal nerve affected branch. Out of 25 patients reported extraction of teeth before the diagnoses of TN for the relief of pain, 17 patients performed one dental extraction, 07 patients performed Two dental extraction and one patient performed 11 dental extraction before the diagnoses of TN.

Thirty-one cases (58.49%) had their isolated Maxillary division involved and 16 cases (30.18%) had their isolated Mandibular division was involved. No patient with isolated Ophthalmic division involvement was reported. The rest of 6 (11.32%) patients had various combination of mandibular, maxillary and ophthalmic division involvement.

Infraorbital was the most common site involved with 29 cases (54.71%). The second most commonly involved site was the mental nerve which was involved in 17 cases (32.07%) and the least involved site was the inferior alveolar nerve that was affected in 7 cases (13.20%).

Table-1: Involved branch / division of the trigeminal nerve (n=53)

Division of trigeminal nerve	Frequency of involvement	%age
Maxillary	31	58.49
Mandibular	16	30.1
Maxillary + Mandibular	04	7.54%
Ophthalmic+Maxillary+ Mandibular	02	3.77
Total	53	100

Table-2: Un necessary teeth extracted

Tooth	Right	Left	Total
Maxillary canine	2	1	3
Mandible canine	0	0	0
Maxillary 1 st premolar	4	3	7
Maxillary 2 nd premolar	1	0	1
Mandible 1 st premolar	2	1	3
Mandible 2 nd premolar	3	2	5
Maxillary 1 st molar	1	1	2
Maxillary 2 nd molar	1	0	1
Mandibular 1 st molar	0	1	1
Mandibular 2 nd molar	0	2	2
Total	14	11	25

DISCUSSION

Painful conditions usually have negative impact on quality of life compared with other health problems. Painful conditions related to pathologies in the Oral & Maxillofacial region are generally well known to the physicians & surgeons, however, amongst the idiopathic pain Trigeminal neuralgia is the most notorious with severe debilitating pain.¹⁵ The definite cause of TN is still unknown therefore there is no treatment which can absolutely cure the patient¹⁶. However, the existence of the trigger zone is one of the characteristic features of TN and a previous study by Mumtaz *et al*¹⁷ indicated that clinical examination of >90% of the patient revealed presence of trigger zones.

We evaluated consecutive 53 patients of TN in Oral & Maxillofacial Surgery department of Ayub Teaching Hospital Abbottabad. The spectrum of the disease was analysed in the patients' population, and unnecessary tooth extraction was counted in the oral cavity of these patients.

Casey *et al*¹⁴ reported that 33% of the patients with TN perform unnecessary dental extractions. A similar situation was noted in the present study as well. Out of the 53 cases in the study, 25 patients (47.16%) were having at least one extraction of their tooth on the affected side of the jaw. This is most probably due to inaccurate diagnosis of the pathology where most of the patients gave history of consulting with the local general dental practitioners and patients perform unnecessary tooth extraction before the diagnoses of TN without any relief of pain. The unnecessary tooth extraction was related with the site of involvement of TN. We found that most of the dental extractions were performed on the right side of the maxilla. Trigeminal neuralgia is thus confused with the dental pathology and treatment.³

In the present study there were 11 patients (20.75%), who gave the history that their pain started after their tooth extraction and to relief the pain they undergone further extractions. Such post traumatic neuralgia may be due to the neuroma formation after traumatic injuries.

Some patients described prodrome of either discomfort or mild to moderate toothache or pain in jaw or face before the start TN. These prodromal conditions may precede an actual attack of TN by several weeks to months. During this prodromal period when patient with toothache seeks dentist consultation requests and perform needless tooth extraction. An accurate and timely TN diagnosis is very important as a variety of specific TN treatments can significantly reduce or eliminate pain in majority of patients.⁷

Some of the previous studies describe the role of diabetes mellitus in the aetiology of TN.¹⁸ A similar finding was also noted in the present study. In our study out of 53 patients 16 patients (30.10%) were giving positive history of diabetes mellitus. Most of the patients were of the opinion that their pain severity subsides when their blood sugar becomes normal. This may be due to psychological effect or the increase blood sugar may increase the pain perception of the patients towards the neuropathic pain. Thus, the diabetes mellitus may have cause and effect phenomenon in the TN and these patients were more likely to perform unnecessary tooth extraction.

CONCLUSION

TN is one of the most severe painful conditions of the maxillofacial region. Unfortunately, it is misdiagnosed with toothache. Due to lack of adequate diagnostic facilities and qualified staff most of these patients perform unnecessary tooth extractions.

Proper workup must be done before embarking upon tooth extraction in patients presenting with lancinating facial pain.

AUTHORS' CONTRIBUTION

AR: Literature search, data analysis. IA: Data interpretation. A, SMG: Proof reading. NA, AA: Write-up.

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