PATTERNS OF TRIGEMINAL NEURALGIA IN PATIENTS PRESENTING TO KHYBER COLLEGE OF DENTISTRY PESHAWAR

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ABSTRACT

Objectives: *Trigeminal neuralgia is an extremely painful condition of unilateral face that is very difficult to diagnose. This study was conducted to evaluate the common peripheral branches involved in trigeminal neuralgia.*

Materials and Methods: *This cross-sectional study was done at Oral and Maxillofacial surgery unit of Khyber College of Dentistry, Peshawar, from May 2018 to December 2018. Total of 266 patients diagnosed with trigeminal neuralgia were included. Pattern was identified on the basis of nerve branch involved. Chi-square test applied, where required, with $p<0.05$ considered significant.*

Results: *Out of the 266 patients, 158 (59.4%) were male and 152 (57.1%) belonging to age group 41 to 50 years. Overall right side was involved more commonly with 166 (62.4%) cases. In females right side was commonly involved while in males left side involvement was noted more commonly. Infraorbital nerves (n=117, 44%) and inferior alveolar nerves (n=108, 40.6%) were commonly involved. Association of nerve involved with age group, gender and side of face was statistically significant ($p<0.001$).*

Conclusion: *Trigeminal neuralgia is common in males in age range of 41-50 years. Infraorbital nerve is commonly involved in females while in males inferior alveolar nerve is commonly affected.*

Keywords: *pattern, trigeminal nerve, neuralgia*

INTRODUCTION

The most common complaint presenting to OMF surgeon is pain. It may be of an odontogenic origin and non-odontogenic origin i-e Trigeminal Neuralgia (TN).[1] International Headache Society defined TN as "unilateral disorder characterized by a brief electric shock-like pain, abrupt in onset and termination, and limited to the distribution of one or more division of trigeminal nerve."[2] It is also called "Tic Douloureux" because of muscles of the face contract during the attack. Pain can often be initiated by a non-noxious stimulus such as cold, water, wind while chewing, talking or a light touch on a localized point known as trigger zone.[3,4] Chronic neuropathic pain occurs in around five to ten per 100,000 people.[5] TN can be classified as primary or idiopathic TN, and secondary TN due to some intracranial lesion such as tumours, multiple sclerosis, vascular loop at root entry zone of nerve and postherpetic pain.[6,7] Most cases of TN are unilateral, bilateral (3%) involvement rarely occurs and need special treatment because of the complexity of presentation.[8]

TN is diagnosed on the basis of history and clinical examination. Investigations include intra-oral and extra-oral radiographs to exclude any pathology.[6] MRI brain is used to differentiate between idiopathic TN and secondary causes such as multiple sclerosis

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and space-occupying lesion in the brain.[9] Trigeminal neuralgia can be treated by medical and surgical treatment modalities. Medical treatment includes anticonvulsant in which carbamazepine is the drug of choice.[6,10]

The rationale of this study was to diagnose Trigeminal neuralgia patient in time by taking proper history and clinical examination. Each branch of trigeminal neuralgia has a trigger zone, stimulation of which results in triggering the pain of trigeminal neuralgia. The pattern of trigger zone area helps in identifying the branch of nerve involvement and guiding the treating clinician to localize the nerve by selectively infiltrating or blocking the nerve with local anaesthesia. It will also help to distinguish the pain of trigeminal neuralgia from dental pain and avoid unnecessary tooth extraction. This study will provide us with local data, helping in improving quality of life by timely diagnosing and thus treating the patients. This study may also help the dental and medical practitioners in the diagnosis and referring patients in time to oral maxillofacial surgeons for further management.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted at the Department of Oral & Maxillofacial Surgery, Khyber College of Dentistry, Peshawar, from May 2018 to Dec 2018. The sample size was estimated with a WHO calculator. It came out to be 266, with 95% confidence of interval on 6% margin of error by taking 43.6 % prevalence of left side involvement of the trigeminal nerve.1 Consecutive, non-probability sampling technique was used to recruit the patients. All patients, irrespective of age and gender, having features of trigeminal neuralgia and not treated before, were included in this study. Patients with a history of conditions that give rise to similar sign and symptoms such as sinusitis, migraine, atypical facial pain, glossopharyngeal neuralgia, and toothache were excluded. Patients with a history of trauma or any pathology in the oral maxillofacial region, causing neuralgic pain were also excluded.

Approval of the hospital's ethical review committee was taken. All patients were well informed about the purpose and procedure of the study. Informed consents were obtained for willingness and participation in this study. The patients were assured regarding the maintenance of the confidentiality of their personal and other data collected from their records. After obtaining an inform consent of each patient, a detailed history was taken followed by an intraoral and extraoral examination of the maxillofacial region to diagnose the nerve involved. The diagnosis was confirmed by injecting local anaesthetic block injection using 2% Lignocaine without Adrenaline. All the patients were advised an Orthopantomogram (OPG) to exclude dental cause and local pathology. Age, sex, side of pain and nerve involved was recorded in structured Proforma. All the collected data were checked by a senior consultant who is Fellow of College of Physician and Surgeon Pakistan (CPSP) for the control of confounders. Exclusion criteria were strictly followed.

The data analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0. qualitative variables like gender, side and nerve involved were presented as frequency and percentages while quantitative variable like age was presented as Mean ±SD. Side and nerve involved were stratified among gender and age to see effect modification. A chi-square test was applied where applicable, with p-value ≤ 0.05 kept as significant.

RESULTS

A total of 266 cases of trigeminal neuralgia were included in this study, among whom 158 (59.4%) were male and an overall age range of 32 -72 years with a mean of 46.5±6.5 years. The 41 -50 years (group 2) age group was most commonly affected with 152 (57.1%) of the cases. The frequency of cases with trigeminal neuralgia by age and gender is shown in table 1.

Most common side involved was the right side with 166 (62.4%) cases, and the remaining 100 (37.6%) were on the left side, no bilateral involvement was found. Among 108 females right side was commonly involved (n=100) while in males left side was more common (n=92).

The most common involved nerve was infraorbital (n=117, 44%) followed by inferior alveolar (n=108, 40.6%), mental nerve with (n=30, 11.3%) and buccal nerve (n=11, 4.1%) respectively. Trigger point was identified in 244 (91.7%) cases.

All the nerves were more commonly involved in age group 2 (41yrs to 50yrs). In females, the most

commonly involved nerve was infraorbital (n=50) while in males, it was inferior alveolar nerve (n=76). All the nerves were commonly affected on the right side except mental nerve, which was more widely involved on the right side. All these associations were statistically significant, with a p-value of less than 0.001. Associations of the pattern of nerves involved with age group, gender and side of the face are shown in table 2.

Table 1: Distribution of age groups (n=266)

Variable	Frequency	Percentage
Group 1 (≤ 40)	39	14.7
Group 2 (41-50)	152	57.1
Group 4 (51-60)	56	21.1
Group 5 (≥ 61)	19	7.1
Total	266	100

Table 2: Associations of Pattern of nerves involved with age group, gender and side of the face

Variables	The pattern of Nerves involved				Total	P-Value
	Infraorbital Nerve	Inferior Alveolar Nerve	Buccal Nerve	Mental Nerve		
Age Groups						
Group 1(≤ 40yrs)	18	19	1	1	39	0.000
Group 2 (41yrs-50yrs)	70	61	9	12	152	
Group 3 (51yrs-60yrs)	24	26	0	6	56	
Group 4 (≥ 61yrs)	5	2	1	11	19	
Gender						
Female	67	32	5	4	108	0.000
Male	50	76	6	26	158	
Side						
Right	34	83	41	8	166	0.000
Left	5	69	15	11	100	

DISCUSSION

Trigeminal neuralgia has a profound effect on the quality of life.[11] The painful attacks are initiated by stimulation of trigger points, which are located on the involved side of the face, but may or may not be in the same division of the nerve. The attack can be initiated by routine activities like mastication, talking, brushing, and touching the face. Pain can also be triggered by cold water and wind.[12] In this study, we found a trigger point in 91.7% of cases. Di Stefano et al,[6] in their study, found trigger zones most commonly in the peri-oral and nasal area, and the frequent manoeuvres for provocation of paroxysmal pain were a light touch (79%) and talk (54%). In a study carried out by Ali et al,[13] more than 90% of patients had a trigger zone on clinical examination.

In this study, it was found that trigeminal neuralgia was common in men with a male to female ratio 1.4:1. Shah et al[3] reported male to female ratio of 3:2. However, these findings do not coincide with other studies done by Rehman et al[9] and Khan et al[14] where trigeminal neuralgia was more common in females. In this study, the mean age of patients with trigeminal neuralgia was 46.5 years. A similar survey carried out by Khitab et al[15] on 242 patients in Peshawar showed a mean age of 43.88 years which is consistent with this study. On the other hand, Rehman et al[9] reported a mean age of 53.9 years and Yadav et al8 from India found a mean age of 54.9 years which were more than 46.5 years found in this study. This shows a much younger age group involved in our region. Trigeminal neuralgia was most commonly found between age range 41-50 years (57.1%) followed by 51-60 years age group (21.1%) in our study. These findings do not coincide with findings of Khan et al[14] who reported a peak incidence of trigeminal neuralgia in the sixth decade (36.90%) followed by seventh decade (23.68%) of life, which is much older than the present study. In this study, the right side was most commonly involved, while no cases of bilateral presentation were seen. Similar results were found in other studies.[1,4] Trigeminal neuralgia occurs predominantly on the right side of face because of

narrower foramen rotundum and foramen Ovale as shown by different studies.[1,3,4,14] Same was found in this study with predominance on the right side (62.4%) right side involvement and 37.6% left side involvement. Bilateral presentations were not seen in this study. These results were approximately the same as those from previous studies carried out by Shah at al[3] and Bangash et al.[4] A study done in India by Rai et al[12] on 60 patients showed that Left side was more commonly involved in females (16 patients) however in this study right side was more commonly involved in males (19 patients). While in our study in females right side (n=100) involvement was most common and in males left side (n=92) was commonly involved. Which is different from the study reported in India.[12] In this study, we have seen the peripheral nerves involved in which infraorbital nerve (44%) was most commonly involved followed by inferior alveolar (40.6%), which is same as a study carried out by Khan et al[14] having infraorbital (42.6%) nerve involvement and inferior alveolar (40%). Same results were also reported in the study done by Rehman et al[9] with infraorbital nerve (58.11%) involvement, followed by mental nerve (29.9%) involvement. While a study reported by Shah et al[3] in 2008 showed greater involvement of inferior alveolar nerve (n=18) followed by the infraorbital nerve(n=15). Another study conducted by Sohail et al[16] in 2006 showed more involvement of mental nerve 44% of cases followed by the infraorbital nerve (32%) of cases. In this study, it was found that in females, infraorbital is most commonly involved (n=67) while in males involvement of inferior alveolar nerve is common (n=76). Both infraorbital and inferior alveolar nerve was common in the age range of 41-50 years. The paroxysmal pain of TN is occasionally attributed to the dentition. Therefore, cases, where TN is confused with pain of dental origin, should be evaluated cautiously so as not to cause any delay in the diagnosis of TN. The odontogenic cause may be ruled out by local anaesthetic injection.[12] History from the patients is an important tool in the diagnosis of TN. The patient often describes a history of brief electric shock-like unilateral pain, initiated spontaneously or by minimal stimulation during daily activities, often coming as paroxysms with pain-free intervals in between the attacks. However, some patients are unable to express precisely the characteristic of their facial pain. In these cases, the interviewer may help by suggesting the descriptive words to prompt the information out of the patients. TN is mainly a clinical diagnosis, and due time and weight should be placed on history and clinical examination to avoid any misdiagnosis.

CONCLUSION

Trigeminal neuralgia is more common in males and commonly occurs in the age range of 42-51 years. The right side is commonly involved in females while left side predominantly in males. The most common peripheral nerve branch involved in females is infraorbital while in males it is inferior alveolar nerve.

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