Original Article

OCCURRENCE AND CLINICAL CHARACTERISTICS OF TRIGEMINAL NEURALGIA: A STUDY

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ABSTRACT

Objective: *To evaluate and analyze the occurrence and clinical characteristics of trigeminal neuralgia in the population of Mardan, Khyber Pukhtunkhwa.*

Material and Methodology: *Data of 190 patients with trigeminal neuralgia reported to the department of Oral and Maxillofacial Surgery, Bacha Khan Medical College Mardan, from Jan 2013 to Dec 2014 were reviewed. History, clinical examination and investigations were carried out for diagnosis. Data regarding the age, gender, site, division and branch of nerve involved and severity of pain was evaluated and analyzed.*

Results: *Females outnumbered the males. The most common age group involved was 51-60 years. Right side (72.63%) was involved more than left side. Single nerve (92.20%) involvement was more common than multiple nerves. Mandibular division was involved in 46.30% cases. Infraorbital nerve was the most common peripheral nerve involved in 42.6% cases and presented with moderate pain.*

Conclusions: *This study showed that TN was more common in aged females. It occurred more on the right side and mainly affected mandibular division. The common peripheral nerve involved was infra-orbital and many patients presented with moderate pain.*

Key words: *Trigeminal neuralgia, Inferior alveolar nerve, Infra-orbital nerve.*

INTRODUCTION

Trigeminal neuralgia (TN) is a painful condition which has been known to humanity since long time. It is characterized by sudden and usually unilateral, severe, brief, stabbing and recurrent pain in the distribution of one or more branches of the trigeminal nerve. The nature of pain is sporadic, sudden and often like electric shock, lasting from a few seconds to several minutes[1,2]. Pain may be spontaneous or triggered by non-noxious stimuli like eating, washing, shaving, talking, yawning, smoking and brushing the teeth and is separated by pain-free intervals of varying duration. Pain attack may occur during the day or night but rarely during sleep. The attack of pain lasts only for seconds, but recurs with variable frequency lasting for days, weeks or months[3,4].

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Recently the estimated incidence of trigeminal neuralgia is about 4. 5 to 12.6 per 100,000 people per annum and its incidence increases with age[1,5]. The peak onset of TN occurs between the ages of 50-70 years, but the disease can occur even in younger age. In several studies[1,3,6] female outnumbered male with a ratio of 3:2. The annual incidence for female is approximately 5.9 cases per 100,000 women, while it is approximately 3.4 cases per 100,000 men. No known racial or ethnic risk factor exist, so far[4,7].

TN is classified as classic (primary or idiopathic) and symptomatic (secondary) due to intracranial lesions such as tumor, infarction and multiple sclerosis[6]. Most of the reported cases are idiopathic type, with no underlying cause. Intracranial lesions that cause compression or traction of the trigeminal nerve are uncommon, but are a recog¬nized cause of secondary trigeminal neuralgia. Published literature revealed a family history for idiopathic type TN in 5% cases[1,3,7].

Pain in TN is almost unilateral in 95% cases, commonly affecting mandibular and maxillary divisions. Ophthalmic division is involved in 5% cases[1,3,5,7]. Local anesthetic block at different sites of nerve distribution

is usually used to identify specific nerve involvement[8].

TN is sometimes misdiagnosed due to non-availability of clear physical or laboratory findings and, therefore, patient seek the help of numerous clinicians before a firm diagnosis is made[9]. It is a debilitating condition and has a negative impact on quality of life and even gets refractory to various treatment modalities after some time[8,9].

The diagnosis of TN is purely based on history, clinical examination and specific nature of pain and presence of trigger zones. Investigations needed, primarily, are intraoral and extraoral radiographs to exclude any oral and maxillofacial pathology. Cerebral imaging like MRI and neuro-physiologic testing are done to exclude intracranial pathologies[8,9,10].

Currently, idiopathic TN is managed by medical and surgical treatments. Carbamazepine, phenytoin, gabapentine or baclofen frequently provides pain relief to patients. Unfortunately, most cases become refractory to pharmacological therapy and side effects of drug may necessitate discontinuation of the medication[11]. Various surgical procedures that are currently in practice are: Neurectomy, cryotherapy, gamma knife radiosurgery, glycerol rhizolysis, balloon compression of trigeminal ganglion, pecutaneous radiofrequency thermal rhizotomy and microvascular decompression[8]. Unfortunately no single treatment option gives consistent results.

The objective of this study was to evaluate the occurrence and clinical characteristics of trigeminal neuralgia in our population and to understand this disorder in the local context.

METHODS AND MATERIALS

This descriptive (case series) study was carried out on 190 consecutive patients of both gender and any age group presenting with the features of trigeminal neuralgia at Oral and Maxillofacial Surgery Unit, Bacha Khan Medical College Mardan from January 2013 to December 2014.With the consent of the patients, a detailed history was taken and thorough clinical examination was carried out. Routine investigations and orthopentograph (OPG) were performed for every patient to exclude any pathology, supplemented by MRI when necessary. Patients who had diseases other than trigeminal neuralgia, causing similar signs and symptoms and previously surgically operated cases were excluded from the study. The diagnosis was based on history, clinical examination, positive diagnostic local anesthetic test and effective response to carbamazepine in all cases. The data concerning the study was obtained on preformed proforma and evaluated and analyzed by applying descriptive statistics.

RESULTS

Gender distribution showed that TN was common in females (62%) than males (38%) with ratio of male to female of 1:1.6. The age of patients at the time of presentation ranged from 32- 88 years, with a mean age 64.65 ±10.45 years. The most common age group involved was 6th decade (36.90%) followed by 7th decade (23.68 %). The details of age distribution are given in Table-1.

Distribution regarding the side of involvement showed that in 72.63% cases TN occurred on the right side while in 27.37% cases left side was affected. Out of 190 cases, single nerve division was involved in 92.20%

Table-1: Age Distribution of Patients with Trigeminal Neuralgia

Age groups in years	n	%
31-40	8	4.20
41-50	33	17.35
51-60	70	36.90
61-70	45	23.68
71-80	22	11.57
Above 80 years	12	6.30
Total	**190**	**100**

Table-2: Distribution of Divisions and Peripheral Nerves Involved in Trigeminal Neuralgia

Peripheral Nerve	n	%
Right Infra-orbital (V2)	60	31.50
Left Infra-orbital (V2)	21	11.05
Right Inferior Alveolar (V3)	50	26.30
Left Inferior Alveolar (V3)	26	13.65
Right Supra-orbital (V1)	04	2.10
Left Supra-orbital (V1)	02	1.05
Right Long Buccal (V3)	07	3.00
Left Long Buccal (V3)	02	2.10
Right Lingual (V3)	02	2.10
Left Lingual (V3)	01	0.42
Combinations		
Right Infra-orbital (V2)+ Right Inferior Alveolar (V3)	10	5.26
Right Supra-orbital (V1)+ Right Infra-orbital (V2)	05	2.60
Total	**190**	**100.0**

Table-3: Distribution of Pain Severity in Patients with Trigeminal Neuralgia

Severity of Pain	n	%
Mild	41	21.57
Moderate	80	42.20
Severe	46	24.13
Very Severe	23	12.10
Total	**190**	**100**

patients while 7.80% patients had multiple nerve divisions involvement. Mandibular division was involved in 46.30% cases followed by maxillary division (42.60%), ophthalmic division (3.20%) and combination in 7.90% cases. The most common peripheral nerve involved was infra-orbital (42.6%) followed by inferior alveolar nerve (40%). Detail of nerve distribution is given in Table-2.

At the time of presentation, 42.20% patients had moderate pain followed by severe pain (24.13%). The detail of pain severity in patients is given in Table-3.

DISCUSSION

Pain is a complex human psycho-physiological experience. Neuralgic pain is produced by a change in neurological structure or function rather than by the excitation of pain receptors that cause nociceptive pain. Neuralgic pain follows the path of nerve that may give rise to the sensation of tooth pain which often is a diagnostic dilemma for oral surgeon. TN is a disorder of the trigeminal nerve that cause episodes of unilateral intense, stabbing, electric shock like pain in the areas of the face supplied by trigeminal nerve-lips, eye, nose, scalp, forehead, upper and lower jaws. TN is not a fatal, but is universally considered to be one of the most painful afflictions known.

In the present study it was evident that females (62%) are more affected than male with a male to female ratio of 1:1.6. Previous studies across the globe showed that TN occurred more in females than males[1,6,12-15]. However these findings do not correlate with the studies performed by Bangash[16] and Ahmed[17], where male to female ratio of 1:2. This difference may be attributed to variation in sample size and sampling technique.

TN is the disease of old age and therefore it manifests itself with increasing age. In this study it was noted that TN was more common in the 6th decade (36.90%) followed by 7th decade (23.68 %). Previous studies[2,4,15,17,18,19] conducted around the world also reported the peak age of onset between the 6th and 7th decades of life. This trend was also seen in the present study where the peak age of onset was the 6th decade and second peak in the 7th decade. TN is not common in younger population and in the present study there was not even a single case in the 1st, 2nd and 3rd decade, of life.

The mean age of onset was 64.65±10.45 years in the current study. The results of the studies done in Europe, Pakistan and India also showed similar results regarding the mean age in TN[3,4,16,20,21]. However similar studies in Khyber Pukhtunkhwa reported a much younger mean age of 43.88 to 54.9 years[11,18,19,20]. The result of our study confirmed that TN is the disease of old age.

The present study showed that TN occurred more on the right side (72.63%) and less on the left side (27.37%) with a ratio of 2.6:1. TN usually affects right side of face as reported in literature[1,3,18,20,22] and the present study also endorses the same observation as right side of the face was affected more than the left side. Not even a single case of bilateral trigeminal neuralgia was found in the present study.

Loh et al[6] reported a ratio of 1.4:1 on right and left side with 6.8% cases of bilateral TN. This ratio is comparatively lower than the present study.

This study showed that mandibular division was affected in 46.30% patients followed by maxillary division in 42.60% patients. Previous published literature across the globe revealed that the mandibular division (V3) was most commonly involved and the ophthalmic division (V1) was less commonly presented[3,6,15,18,24]. The high frequency of mandibular division may be attributed to the fact that patients with maxillary or other craniofacial pain consult physicians, ENT surgeons or ophthalmologists while patients with mandibular pain report to oral surgeon for consultation. Regarding the involvement of ophthalmic nerve the results of the present study coincides well with the results of previous studies[3,19,24] but contradicts with the results of Khitab[18] and Rehman[1], where not a single case of ophthalmic nerve involvement was reported.

The most common peripheral nerve involved was infra-orbital (42.6%) followed by inferior alveolar nerve (40%). The results of this study correlates well with previous studies[1,2,3,6,15,18,24] where the most commonly affected peripheral nerve was infra-orbital followed by inferior alveolar nerve. These results are slightly different from the study of Sohail et al[25] where

the inferior alveolar nerve was the most commonly affected, accounting 44% of the cases.

TN has very agonizing pain and patients report to oral and maxillofacial surgeon for relieving their pain. Nearly half of the patients in this study presented with moderate pain (42.20%) followed by severe pain. Toll[26] et al reported that 94% patients suffered from moderate pain. This figure is much higher then the findings of our study mainly becuase of the sociodemographic variables.

CONCLUSIONS

It is concluded from the present study that:

1. TN was more common in aged females.
2. It occurred more on the right side and mainly affected mandibular division.
3. The common peripheral nerve involved was infra-orbital and many patients presented with moderate pain.

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