

TRIGEMINAL NEURALGIA: A STUDY ON 242 PATIENTS

*UMAR KHITAB, BDS, MSc (London)
**MUSLIM KHAN, BDS
***RAHMAN UD DIN, MBBS, FCPS (Med) FCPS (Gastro)
****ABDUL WAHID, BDS
**ATTA UR RAHMAN, BDS

ABSTRACT

The work was undertaken to study the clinical features of trigeminal neuralgia (TN) in 242 patients reported to oral and maxillofacial surgery unit, Khyber College of Dentistry, Peshawar and at private clinic of the Principal author at Mardan for a period of four and a half years, i.e., from January 2001 to June 2005. There were more males than females, i.e., (51.65%) and (48.34%) respectively. The frequency on the right side was greater (63.22%) than on the left (35.95%) and only two cases reported with bilateral involvement (.82%). The peak age of onset was between 5th and 6th decades of life, i.e., 40.08% and 26.85% respectively. The mandibular (V1) and the maxillary (V2) divisions of the trigeminal nerve were affected almost equally, i.e., (V1) was involved in (39.669%) cases while (V2) in (40.08%) of cases. Both V1 and V2 were involved in (18.18%) of cases. None of the patient reported with ophthalmic (V3) division involvement in isolation, combine involvement of V3 and V2 was reported in 4 cases (1.65%), while V3 and V1 combination was reported in only one case (.41%). The disease has mostly affected people with low socio-economic status, i.e., the labour class in the region. (60.74%) of the TN patients were from this class.

Key words: Trigeminal neuralgia, Khyber College of Dentistry, Maxillary and Mandibular divisions, TN in NWFP, neuralgia facial pain, Low Socio-Economics and TN.

INTRODUCTION

Trigeminal Neuralgia (TN), or Tic douloureux is a severe chronic pain syndrome characterized by dramatic, brief stabbing or electric shock like pain paroxysms felt in one or more divisions of the trigeminal nerve, either spontaneously or on gentle tactile stimulation of a trigger point on the face or in the oral cavity.¹ Trigeminal neuralgia has been known since early civilization. In 1756 Andrea gave the first comprehensive description of the trigeminal neuralgia, he also suggested that it was a convulsive disorder and named it as "tic douloureux."²

Excluding tumours and demyelinating disease, the exact aetiology is not fully known. Two divergent viewpoints, central versus peripheral were presented

to explain the possible mechanism of trigeminal neuralgia. In theory of central mechanism, a tactile stimulus on face evokes a repetitive self-exciting discharge at the brain stem, which is not inhibited at central level. The peripheral theory suggests that there is compression of trigeminal nerve roots at entry into the pons by a vessel or tumour, resulting in demyelination of the nerve due its pulsatile compression. This demyelination results in short-circuiting of neuronal flow and hence trigeminal neuralgia.'

Trigeminal neuralgia is treated with carbamazepine (which still remains the first line of treatment) or other anticonvulsant drugs. But the surgical management includes cryosurgery, alcohol injection, thermocoagulation, peripheral neurectomy, intracranial microvascular decompression (MVD), glycerol rhizolysis, and

* Assistant Professor Oral and Maxillofacial Surgery Unit, Khyber College of Dentistry, Peshawar ** TMO (Resident) Oral and Maxillofacial Surgery Unit, Khyber College of Dentistry, Peshawar *** Senior Registrar Medicine, DHQ Teaching Hospital, Gomal Medical College, D.I.Khan
****Registrar Oral Surgery Unit, Sardar Begum Dental College, Peshawar

posterior cranial fossa exploration and more recently gamma knife radiosurgery, radiofrequency thermal rhizotomy (RTR) and auricular electric stimulation (auriculotherapy) has been reported.'

MATERIALS AND METHODS

Data of consecutive series of 242 patients of trigeminal neuralgia was collected over a period of 5 years i.e., from 2001 to 2005 at Oral and Dental College Oral and maxillofacial Surgery unit Khyber College of Dentistry Peshawar (80 patients) and the private clinic of the principal author at Mardan (162 patients). The diagnostic criteria were Clinical and radiological and effective response to carbamezapine, the involved branch was confirmed with local anesthetic test. Age at onset, gender, nerve branch involved and socio-economic status of the patients were the parameters analyzed. The patients were categorized on the basis of their socioeconomics class and occupation as under;

- A. Elite class with very luxurious socio-economic status
- B. Patients with good socio-economics e.g. professors, lecturers and businessmen etc
- C. Patients with moderate socio-economic status like clerks, junior school teachers shopkeepers etc.
- D. Very poor socioeconomics like the labour class

RESULTS

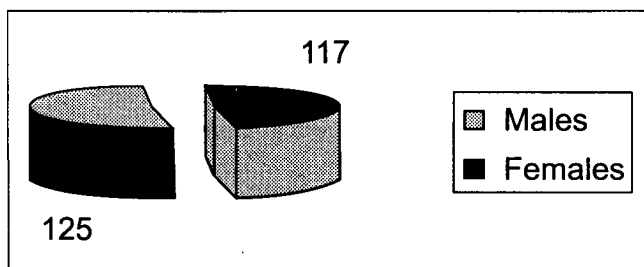


Fig 1. Gender distribution of Trigeminal Neuralgia patients

AGE AT ONSET

The age range was from 15 to 90 years with the mean age of 43.88 years and the peak incidence in the fifth and sixth decade of life. (Table).

GENDER

125 (51.65%) were male patients and 117 (48.34%) were female patients the male to female ratio was 1.068:1, the ratio and percentages shows that the

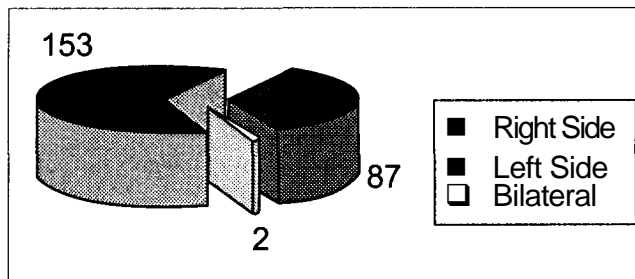


Fig 2. Site distribution of Trigeminal Neuralgia

disease is a touch common in males as compared to female (Fig 1).

SITE OF INVOLVEMENT

In 153 (63.22%) patients the right side was involved while in 87 (35.95%) the left and only two cases (.82%) were bilateral both of them were female. The right side involvement was more then the left side (Fig 2).

THE AFFECTED BRANCH OF THE TRIGEMINAL NERVE

The isolated maxillary and the mandibular division of the trigeminal nerve were affected almost equally, i.e., 40.08% and 39.669% respectively (Table 2). None of the patient was reported with isolated ophthalmic division involvement. While the rest of the patients reported with the involvement of various combinations of nerves i.e. in 44 patients i.e., 18.18% both the mandibular and maxillary divisions were affected. 5 of the patients i.e., 2.06% reported with involvement of ophthalmic division of the trigeminal nerve but not in isolation as mentioned previously it was involved in combination with the maxillary division on 4 occasions while on one occasion it was involved in combination with the mandibular division of the trigeminal nerve.

TABLE 1: AGE DISTRIBUTION OF TRIGEMINAL NEURALGIA PATIENTS

Age in years	No of patients	Percentage
0-10	0	0%
11-20	3	1.23%
21-30	10	4.13%
31-40	43	17.76%
41-50	97	40.08%
51-60	65	26.85%
61-70	18	7.43%
71-80	4	1.68%
81-90	2	.82%
91-100	0	0%
Total	242	100%

TABLE. 2: THE AFFECTED NERVE DIVISION

Nerve	Bilateral	Side of the face		Total
		Right	Left	
Mandibular	0	65	31	96 (39.669%)
Maxillary	1	61	35	97 (40.08%)
Ophthalmic	0	0	0	0 (0%)
Mandibular and maxillary	1	25	18	44 (18.18%)
Maxillary and ophthalmic	0	1	3	4 (1.65%)
Mandibular and ophthalmic	0	1	0	1 (.41%)
Total	2	153	87	242 (100%)

Both the bilateral cases were female. In one patient bilateral maxillary nerve was involved while in other the mandibular of the right side and the maxillary of the left was involved.

SOCIO-ECONOMIC CATEGORIZATION

The socio-economic categorization of the patients (Table 3) shows that most of the patients were from category C (36.77%) and D (60.74 %). None of the patient reported from category A and a very small percentage of patients (2.47%) reported from category B.

DISCUSSION

Trigeminal neuralgia (TN) is a characteristic disorder of later life that has been well known for a long period of time. In spite of its early identification and numerous investigations over the years, the true identity of this condition is not fully understood and the cause is still unknown. All the previous studies have reported that the peak age of onset for TN is between the fifth and eighth decades of life.⁵⁻⁹ This trend was also seen in this study with the peak age of onset fifth and sixth decades of life. While a reasonable number of patients were affected in the fourth decade of life. In these patients the diseases like multiple sclerosis were excluded which also causes neuralgic pain on the face, through detailed neurologic assessment, supporting the cardinal rule that any patient below forty years of

age should be subjected to detailed neurological assessment to exclude other demyelinating diseases like multiple sclerosis. The mean age of the TN patients according to this study was 43.88 years. But according to the Loh H S¹⁰ study on 44 patients in Singapore and Malaysia the mean age was 54.9 years which is much higher. This shows that TN is common in a younger age group in this part of the world, i.e., North West Frontier Province.

Katusic *et al.*⁵ reported female predominance in the ratio of 5.9:3.4; other reviewers also reported similar findings.¹⁰ while this study shows that a total of 125 (51.65%) patients were males and 117 (48.34%) were female patients the male to female ratio was 1.068:1, the ratio and percentages shows that the disease is a touch common in males as compared to female. The study supports Kalysanaraman S9 and Daftaray VG's" studies which also shows male predominance. Zakrzewska¹² noted and interesting equal representation of male to female incidence.

The study is consistent with the other reviewers as far as the site involvement is concerned, which also shows that the usual site of affliction for TN is the right side." According to this study out of 242 patients, in 153 al.,102%) patients the right side was involved while in 87 (35.95%) the left. The ratio of right to left side involvement was 1.75:1 and only two cases (.82%) were bilateral, both of them were female, one aged 40 years and the other 50 years. This shows that the percentage of bilateral TN (.82) is very low in the region when we compare this with the study of Katusic *et al.*,⁵ and Loh SH *et al.*,¹⁰ 3% and 6.8% respectively.

The present study shows that maxillary and the mandibular division of the trigeminal nerve were affected almost equally, i.e., 40.08% and 39.669% respectively. While in 18.18% cases both the maxillary and the mandibular divisions of the trigeminal nerve were involved. No case of TN with involvement of

TABLE 3: SOCIO-ECONOMIC CATEGORIZATION OF TRIGEMINAL NEURALGIA PATIENTS

Category	No of Patients	Percentage
A	0	0%
B	6	2.47%
C	89	36.77%
D	147	60.74%
Total=A+B+C+D	242	100%

ophthalmic division of trigeminal nerve in isolation was reported. This division of the trigeminal nerve was affected in 5 cases once in combination with the mandibular division and on four occasions in combination with the maxillary division of the trigeminal nerve. All the previous studies supports that the mandibular and maxillary divisions of the trigeminal nerve are the most common nerve divisions affected in TN patients, while the ophthalmic division is the least commonly affected.^{5,6,9}

Trigger points are the areas of the face that with light touch will trigger an attack. These points are characteristic of TN. Such points may be located on the lips, side of the jaws, nasolabial fold, underneath the eye, in the eyelids, upper and lower alveolus and any where along the distribution of the trigeminal nerve. There are several activities that can trigger an attack. Eating can become almost impossible and loss of weight is common among those with the disorder, shaving applying make up and even talking can become difficult. In some cases even a gust of wind can be enough to start an attack. An attack can also start without any provocation even without treatment. There can be periods of remission, when pain is completely absent. These periods which can last days, weeks, months or even years are unpredictable. However, without medical treatment the pain usually returns."

In the present study the most common trigger points or zones were the upper and lower alveolar ridges, nasolabial folds, the commissure, lateral borders of the lips, and the area below the eyelids. The common triggering stimuli were talking, washing, chewing, mouth opening, touching and shaving.

Many patients with TN that do not conform to those of classical TN, in addition to stabbing, shock like pain, many patients experience pain that they describe as throbbing, burning, crushing or pulsating for some there is no remission from the pain these atypical forms of trigeminal neuralgias are very difficult to treat.¹⁴

Dental professionals have unique background as a result of training in both medical and dental sciences. They have knowledge in the diagnosis and management of pain disorders in oral, facial and head region. TN is one of these disorders that fall within the area of expertise of the dental and medical professionals."

CONCLUSIONS

TN is a relatively common problem in the region. Most of the patients were of low socioeconomics class. Whether nutritional deficiency is a possible predispos-

ing factor or not? This is a big question, and to answer this all these patients should be investigated thoroughly to exclude this factor.

The primary mode of treatment given to these patients was conservative, i.e., pharmacotherapy with carbamezapine. In resistant cases invasive procedures like alcohol injections and peripheral neurectomies were performed. The authors wish to conduct another study on the results of the three treatment modalities, i.e. pharmacotherapy, alcohol injections and peripheral neurectomies given to these patients, which will require a follow up of at least three years.

ACKNOWLEDGEMENT

The authors are very thankful to the staff members of oral and maxillofacial surgery unit of Khyber College of Dentistry, Peshawar for their help and co-operation in the completion of the study.

REFERENCES

- 1 Bergouignan M. Successful cure of essential facial neuralgias by sodium diphenylhydantoinate. *Rev Laryngol Otol Rhinol (Bord)* 1942;63:34-41
- 2 Shah A A, Ikram R. Treatment choices in trigeminal neuralgia A 3 years audit. *Pakistan Oral & Dent. Jr.* 1997 17 (2): 44-48.
- 3 Ayub S, Ilyas M, Ali M. Surgical management of trigeminal neuralgia by micro-vascular decompression. *JPMI* 2004; 18 (3):507-11
- 4 Shawaf M, Khudairy D, Khudairy T, Khudairy T. Trigeminal neuralgia: case reports of two different treatment modalities. *Pakistan Oral & Dent. Jr.* 2004; 124 (1) 27-33.
- 5 Katusic S, Beard M, Bergstrahl E, Durland LT. Incidence and clinical features of trigeminal neuralgia, Rochester, Minnesota, 1945-1984. *Ann Neurol* 1990; 27:89- 95
- 6 Patrick HT. The symptomology of trigeminal neuralgia. *JAMA* 1914; 62: 1519-24
- 7 Rowbotham GF. Trigeminal neuralgia, pathology and treatment. *Lancet* 1954; 1:796-8.
- 8 Harris W. an analysis of 1433 cases of paroxysmal trigeminal neuralgia (trigeminal tic) and the end results of Gasserian alcohol injection. *Brain* 1940; 63:209-24.
- 9 Kalysanaraman S, Ramamurthi B. Trigeminal neuralgia a review of 331 cases. *Neurol India* 1970; 18:100-8.
- 10 Loh H S, Ling S Y, Shanmugasuntharam P, Zain R, Yeo J F, Khoo S P. A retrospective survey of a sample of patients in Singapore and Malaysia. *Australian Dent J* 1998; 43(3): 188-91.
- 11 Daftary VG, Javery PM, Dighe SD. Treatment of trigeminal neuralgia by sensory rhizotomy: a clinical study of 100 operated cases. *J Indian Med Assoc* 1965; 45:419-24.
- 12 Zarkrzewska JM. Medical management of trigeminal neuralgia. *Br Dent J* 1990;168:399-401
- 13 Miles J, Eldridge P. Trigeminal neuralgia. *Br J Neurosurg* 1998; 12: 288-9.
- 14 Adams CB. Trigeminal neuralgia, pathogenesis and treatment. *Br J Neurosurg* 1997; 11:493-5
- 15 Rabinovich A, Fang J, Scrivani S. Diagnosis and management of trigeminal neuralgia. *Columbia Dental Review* 2000; 5: 4-7.