

Trigeminal neuralgia. A retrospective survey of a sample of patients in Singapore and Malaysia

H. S. Loh*

S. Y. Ling†

P. Shanmuhasuntharam‡

R. Zain§

J. F. Yeo,

S. P. Khoo¶

Abstract

This survey was undertaken to study the clinical features of trigeminal neuralgia in an Asian population. Demographic data of 44 patients treated at the Dental Faculty of the National University of Singapore and at the University of Malaya were reviewed. The results of the survey were analysed and comparisons made with those of Caucasian patients as reported in other studies where there was a general similarity in the clinical findings. Trigeminal neuralgia presented predominantly in females. Right-sided involvement occurred at a greater frequency, and the peak age at onset was between the sixth and seventh decades of life. The only significant variant in the present sample was the greater involvement of the mandibular branch of the trigeminal nerve rather than the maxillary division. In addition, there was a much greater representation from Chinese patients over Malays as compared with their ratios in the general population.

Key words: Trigeminal neuralgia, mandibular branch involvement, depression and anxiety, demographic data.

(Received for publication June 1995. Accepted August 1995.)

Introduction

Many papers¹⁻⁴ have been published describing various aspects of trigeminal neuralgia. It is a disorder of unknown aetiology characterized by sudden, recurrent short paroxysms of high intensity facial pain occurring in later life and females are affected more than males (F:M=2:1). Right-sided facial affliction predominates with the maxillary nerve most commonly involved. The condition is generally progressive with the pain worsening at increasing frequency. Medical treatment is usually the first option. In refractory cases, surgical options may be offered.

There are few reports of trigeminal neuralgia in oriental populations.⁵⁻⁸ Because of the paucity of Asian data on this disorder, a retrospective study of Singaporean and Malaysian patients was undertaken with the purpose of understanding the disorder in the local context, and to compare the data with those published relating to Caucasian patients.

Materials and methods

Data relating to a consecutive series of 44 patients with typical trigeminal neuralgia was collected over a period of 18 years from 1977 to 1994. Twenty of these patients were treated in the Department of Oral and Maxillofacial Surgery at the National University of Singapore and the remaining 24 patients attended the Department of Oral Medicine and Oral Pathology at the University of Malaya. All of the cases included in this study were selected on the basis of clinical and radiological diagnosis of typical trigeminal neuralgia, a positive diagnostic local anaesthetic test, and effective response to carbamazepine. The parameters analysed included

*Professor and Head, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, National University of Singapore.

†Teaching Fellow, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, National University of Singapore.

‡Lecturer, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Malaya.

§Associate Professor, Department of Oral Medicine and Oral Pathology, Faculty of Dentistry, University of Malaya.

¶Associate Professor, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, National University of Singapore.

¶Lecturer, Department of Oral Medicine and Oral Pathology, Faculty of Dentistry, University of Malaya.

Table 1. Age at onset of trigeminal neuralgia

Age	No.	%
3rd decade	2	4.5
4th decade	5	11.4
5th decade	6	13.6
6th decade	13	29.5
7th decade	12	27.3
8th decade	5	11.4
9th decade	1	2.3

age at onset, gender, race, site of involvement, and clinical presentations.

Results

Age at onset

This ranged between 24 to 89 years, with a mean age of 54.9 years. The peak incidence was in the sixth and seventh decades of life (Table 1).

Gender

Females comprised 63.7 per cent of the patients, representing a ratio of 1.75:1, reflecting an elevated risk for female subjects (Table 2).

Ethnic distribution

Chinese patients constituted 68.2 per cent of the series, followed by 13.6 per cent of Malays and 11.4 per cent of Indians. The remaining 6.8 per cent were classified under 'Others' and constituted one Japanese and two Eurasians (Table 2).

Site of involvement

Three patients had bilateral involvement constituting 6.8 per cent of the series (Table 3). Of the remaining 41 cases, 24 patients (54.5 per cent) suffered excruciating pain on the right side of the face, and 17 patients on the left side. This gave a site ratio of 1.4:1 confirming a predominance of right side facial affliction.

Nature of the pain

Thirty-seven patients (84 per cent) reported the pain as severe (intense), sharp and shooting in nature, while 3 patients reported it as 'burning', 2 as 'electric shock', one as 'pulling', and one as a 'feeling of being injected with a red hot needle'.

Table 2. Gender and ethnic group distribution of trigeminal neuralgia patients

Gender	Chinese	Malay	Indian	Others	Total
Female	22	2	3	1	28 (63.7)
Male	8	4	2	2	16 (36.3)
Total	30(68.2)	6(13.6)	5(11.4)	3(6.8)	44 (100)

Percentage in parenthesis.

Table 3. Distribution of side of face and division of nerve involved

Nerve	Bilateral	Side of face		Total
		Right	Left	
Mandibular	0	12	10	12 (50.0)
Mandibular and maxillary	3	4	1	8 (18.2)
Maxillary	0	7	6	13 (29.5)
Maxillary and ophthalmic	0	1	0	1 (2.3)
Total	3 (6.8)	24 (54.5)	17 (38.6)	44 (100)

Percentage in parenthesis.

Affected divisions of trigeminal nerve

The mandibular division was the most frequently involved branch (Table 3). Twenty-two patients (50 per cent) reported neuralgic pain confined solely to the mandibular distribution of the face. Eight patients (18.2 per cent) suffered this condition with the additional involvement of the maxillary division on the same side.

Trigger zones

Twenty-seven patients (61 per cent) presented with trigger zones and these varied widely in location from the nasolabial fold to the upper lip, the commissure of the lips, the upper and lower alveolar ridges, the lateral border of the lower lip, and the temporal regions. There were also many types of triggering stimuli and these included talking, swallowing, laughing, washing, wind-blowing, shaving, mouth opening, touching, and chewing. Most patients responded to different intensities of the provoking stimulus and reacted to more than one type of triggering stimulus.

Treatment

All of the 44 patients received, and responded well to medical treatment with different dosages of carbamazepine. Some cases were supplemented with phenytoin sodium, bupivacaine hydrochloride, mefenamic acid, codeine, vitamin B complex, and multi-vitamin and mineral complex. Of significance were 2 patients who were taking minor tranquillizers (diazepam), 4 patients taking antidepressants (amitriptyline, doxepin, dothiepin), and one patient undergoing acupuncture therapy. Other forms of modalities employed to further ease the pain included 12 cases of transcutaneous electric nerve stimulation, 6 cases of cryosurgery, 2 cases of soft laser therapy, and 2 cases of peripheral neurectomy. Only 2 cases were referred to neurologists for further evaluation and management.

Discussion

Trigeminal neuralgia 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 previous studies have reported the peak age of onset as between the fifth and eighth decades of life.¹⁻⁵ This trend was also seen in this series with the peak age between the sixth and seventh decades of life. This concurrence supports the cardinal rule of subjecting patients under 40 years of age who complain of neuralgia-like pain in the face to a detailed neurological assessment to exclude associated diseases like multiple sclerosis.

Katusic *et al.*¹ reported female predominance in the ratio of 5.9:3.4. Other reviewers reported similar findings.^{2,4} The present study also confirmed the trait of female dominance, with a ratio of 1.75:1. However, it is interesting to note that three reports from India demonstrated a male predominance.⁵⁻⁷ The present series included five Indians, three of whom were females. This small sample may preclude useful evaluation and comparison of the local Indian population in India. Although the disorder appeared to have a gender inclination, Zakrzewska⁹ noted an interesting equal representation of male to female incidence after adjustment was made to account for the older female population in her study.

Over two-thirds of the patients in the present series were Chinese. It is noted that the combined Chinese populations in Singapore and Malaysia make up only 40 per cent of the total. The over-representation in this series may reflect an underlying propensity of the Chinese towards the disorder. However, after detailed analysis, the authors believe this disparity may be due to the fact that most of the patients seen in the University of Malaya were from Kuala Lumpur and Selangor which are predominantly populated by Chinese, and this, combined with the predominant Chinese population of Singapore, could well reflect a biased racial presentation in this series.

The usual site of affliction of trigeminal neuralgia is right-sided and, in this study, the right side of the face was also much more involved (ratio 1.4:1). The bilateral cases of 6.8 per cent formed a slightly larger proportion than those of previous reports which were stated as less than, or equal to 3 per cent.^{1,5} This variant may be unique to this part of the world and, therefore, deserves further study with a larger sample size.

Although patients may enjoy a short duration of remission lasting a few weeks to months, most related their painful condition as progressive, intense, sharp, and shooting in nature. Such morbidity often has an adverse effect on the state of well-being, precipitating the patient into depression and anxiety and, in some patients, suicide may be

contemplated.⁸ In the present study, four cases (9 per cent) manifested clinical features of anxiety and depression that warranted treatment with tranquillizers and antidepressants. In dealing with refractory cases one must be observant in evaluating signs and symptoms of depression and suicidal tendencies. It is prudent to counsel any suspect patients and, if necessary, refer them for psychiatric assistance.

The majority of the patients in this series were sensitive to a multitude of triggering stimuli which varied in both type and intensity. These included talking, swallowing, laughing, washing, wind-blowing, shaving, mouth opening, touching, and chewing. About 61 per cent of the patients reported a trigger zone as a feature of the condition. The most common were small, well-defined areas such as the nasolabial fold around the upper lip, the commissure of the lips, and the upper and lower alveolar ridges as well as the lateral border of the lower lip. It is a well-established fact that patients maintain a 'frozen face' in a desperate attempt to avoid initiating the trigger point or zone. In some cases, patients may abstain from eating, tooth brushing, washing, and talking, leading to severe weight loss, neglected dental hygiene, and self-imposed social isolation.¹⁰

In the present study, some patients focused the trigger zone to a vague area of the jaw believing they were suffering toothache. The converse situation was also noted. These variable modes of presentation emphasized the importance of eliminating potential dental aetiology before considering a differential diagnosis of trigeminal neuralgia. It is well known that dental extractions have been performed on the basis of wrong diagnosis. This is an error which an inexperienced dentist may commit when confronted with a case of trigeminal neuralgia in its initial stage when the pain may mimic that of toothache.

About two-thirds of the patients in the present series reported affliction of the mandibular division either alone or in combination with the maxillary division, making it the most frequently affected branch of the fifth cranial nerve. Reports from other studies stated the contrary.^{1,2,5} However, all support the usual feature of this condition in which the mandibular and maxillary divisions are more commonly involved than the ophthalmic. Shankland *et al.*¹¹ reported a third of the patients in their series presented with neuralgic pain involving both the second and third divisions of the fifth nerve. Some of the patients in the present study also had mandibular and maxillary divisions simultaneously affected.

Although the frequent mandibular involvement may be inherent in Asian patients, the authors believe that there is a possibility of patient bias occurring in the present study. This could arise from the pattern of patients reporting their ailments to

different attending specialists. From the authors' general observations, it is highly likely that patients with maxillary or other craniofacial pain would consult physicians or ENT surgeons, believing the ailment to be medical in nature. The reverse is also true that any mandibular pain may be perceived to be dentally related and therefore those afflicted would consult a dental surgeon. The existence of this trend could contribute in part to the predominance of mandibular branch involvement in the present report.

Medical treatment of trigeminal neuralgia is usually the first option and, in some patients, surgical options may be offered. Carbamazepine is highly effective and specific for this condition. This therapeutic response also aided in the diagnostic confirmation of the condition in this study. Lee⁸ reported that 70 per cent of patients afflicted with this disease responded to carbamazepine, and an additional 10 to 15 per cent responded to a combination of carbamazepine and phenytoin sodium. The authors of this study concur with this finding. Possible side effects such as skin rashes, leukopenia, thrombocytopenia, abnormal liver function, and cerebellar dysfunction may occur in 5 to 10 per cent of those patients taking these medications. All of the patients in the present study were initially treated with carbamazepine, and they responded favourably. A low dosage of carbamazepine was maintained through the combined use of other analgesics such as mefenamic acid, bupivacaine hydrochloride, and codeine. Other treatment modalities were employed in more refractory cases including low power laser therapy, transcutaneous electric nerve stimulation, cryoanalgesia, and peripheral neurectomy. Only a few cases were referred for neurosurgical consideration which underlines the authors' philosophy of medical treatment as the first mode of treatment. Simple surgical intervention was employed to relieve the intractable pain of those few patients who did not respond to medical therapy. The authors' experience with avulsion of affected peripheral nerves is similar to others, with a significant incidence of anaesthesia dolorosa though at a lower intensity. The more central approach via the microvascular decompression technique has had a good success rate. However, it is not without morbidity and mortality.^{8,12}

Conclusion

This study demonstrated numerous clinical similarities of trigeminal neuralgia afflicting the Asian and Caucasian populations. The only exception

to other findings was the greater involvement of the mandibular branch of the fifth cranial nerve and the disproportionate representation of the Chinese racial type in this sample. The authors recognize that their sample size could be increased to present clearer data evidence for the involvement of the mandibular branch and other related features. Follow-up studies in the region would be beneficial to establish distinct Asian patterns in this neurological disorder.

Acknowledgements

The authors wish to thank the staff members of the departments of the National University of Singapore and the University of Malaya for access to their patients' records. Special thanks are extended to Dr F. C. Loh and Miss Y. S. Ong for undertaking the initial part of the survey.

References

1. Katusic S, Beard M, Bergstralh E, Durland LT. Incidence and clinical features of trigeminal neuralgia, Rochester, Minnesota, 1945-1984. *Ann Neurol* 1990;27:89-95.
2. Patrick HT. The symptomatology of trifacial neuralgia. *JAMA* 1914;62:1519-24.
3. Rowbotham GF. Trigeminal neuralgia: pathology and treatment. *Lancet* 1954;1:796-8.
4. Harris W. An analysis of 1,433 cases of paroxysmal trigeminal neuralgia (trigeminal tic) and the end results of Gasserian alcohol injection. *Brain* 1940;63:209-24.
5. Kalysanaraman S, Ramamurthi B. Trigeminal neuralgia: a review of 331 cases. *Neurol India* 1970;18:100-8.
6. Abraham J, Chandy J. Trigeminal neuralgia. *Neurol India* 1962;10:59-63.
7. Daftary VG, Javeri 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.
8. Lee KH. Facial pain in trigeminal neuralgia. *Ann Acad Med Sing* 1993;2:193-6.
9. Zakrzewska JM. Medical management of trigeminal neuralgia. *Br Dent J* 1990;168:399-401.
10. Piatt JH, Wilkins RH. Treatment of tic douloureux and hemifacial spasm by posterior fossa exploration: therapeutic implications of the various neurovascular relationships. *Neurol Surg* 1984;4:462-71.
11. Shankland WE. Trigeminal neuralgia: typical or atypical. *J Craniomand Pract* 1993;11:108-12.
12. Adams CBT. Microvascular decompression: an alternative view and hypothesis. *J Neurosurg* 1989;3:459-64.

Address for correspondence/reprints:

Professor Loh Hong Sai,
Head, Department of Oral and Maxillofacial Surgery,
Faculty of Dentistry,
National University Hospital,
5 Lower Kent Ridge Road,
Singapore 0511.