Malaysian Dental Journal (2012) Volume 34 Issue 1

MALAYSIAN DENTAL JOURNAL

A Retrospective Study of the Clinical Characteristics of Malaysian Trigeminal Neuralgia (TGN) Patients seen at the Oral Medicine Clinic, Kuala Lumpur General Hospital

Sathasivam HP[1], Ahmad AR[2], Hin LS[3]

[1] *Department of Dental, Hospital Sultan Ismail, Johor Bahru*

[2] *Oral Medicine and Oral Pathology Specialist, Oral Surgery Clinic, Hospital Tengku Ampuan Afzan, Kuantan*

[3] *Consultant Oral Medicine and Oral Pathology Specialist, Institute for Medical Research, Kuala Lumpur*

ABSTRACT

Aim. This study was performed to address the lack of epidemiological as well as clinical data of trigeminal neuralgia (TGN) in Asian populations seen at dental specialist clinics with emphasis on the Malaysian population.
Materials and Methods. Retrospective in nature involving evaluation and analysis of data obtained from the clinical records of 63 patients diagnosed with TGN between 1st January 2001 and 31st December 2010 and followed up at the Oral Medicine Clinic of the Kuala Lumpur General Hospital (KLGH) until 30th June 2011. Descriptive statistics was performed using the Statistical Package for Social Sciences software version 17.
Results. Mean age at time of diagnosis with TGN was 58.2 (±12.0) years with peak incidences in the sixth and seventh decades of life. TGN presented predominantly in females (58.7 %). Mean follow-up period was 33.7 (±14.9) months. The ethnic distribution reflected their ratios in the general population of Malaysia. TGN more commonly affected the right side of the face. The most common pain descriptor used was "sharp/stabbing pain". The mandibular branch was more commonly involved than the maxillary branch in this population of patients. Patients had diverse triggering stimuli/factors. All patients received only pharmacological treatment and most responded well to carbamazepine.
Conclusion. The clinical characteristics of Asian TGN patients seen at the Oral Medicine Clinic are strikingly similar to Caucasian patients with the only obvious exception being the greater involvement of the mandibular branch of the trigeminal nerve amongst Asian patients compared to their Caucasian counterparts.

Key Words: Not available

Please cite this article as: Sathasivam HP, Ahmad AR, Hin LS. A Retrospective Study of the Clinical Characteristics of Malaysian Trigeminal Neuralgia (TGN) Patients seen at the Oral Medicine Clinic, Kuala Lumpur General Hospital. Malaysian Dental Journal 2012; 34(1): 8-12.

INTRODUCTION

The International Headache Society (IHS) has defined trigeminal neuralgia (TGN) as a usually unilateral condition characterized by severe brief electric-shock like recurrent pain that is abrupt in both its onset and termination and limited to the sensory distribution of one or more branches of the fifth cranial nerve.[1]

The exact aetiopathogenesis of TGN is still uncertain. Several hypotheses however, have been put forward, including compression of the trigeminal nerve by neoplastic or vascular anomalies; infectious agents; and demyelinating conditions such as multiple sclerosis (MS). The most popular theory is that of compression of the trigeminal nerve as it leaves the brainstem. It is believed that in 80–90 % of patients, TGN is caused by compression of the trigeminal nerve root a few millimeters proximal to the pons by a loop of artery or vein.[2-6] Although a loop of blood vessel is usually to blame, there are other occasional causes of compression such as cysts, neoplasms, and structural deformities of the skull base.

Although many articles have been published describing the demographic as well as the clinical characteristics of TGN, the majority were based on Caucasian populations.[4,7-12] As such, due to the relative paucity of demographic and clinical data concerning Asian TGN patients, a retrospective

study was performed. Peninsular Malaysia has a mixed Asian population with three main ethnic groups being the Malays, Chinese and Indians. It is hoped that information derived from this study would be useful to clinicians that are involved in the diagnosis and management of TGN. From this study, we also hope to be able to identify differences in the clinical characteristics of TGN between the different ethnic groups. Furthermore, it may provide us with a better understanding of possible predictive or prognostic factors associated with TGN.

MATERIALS AND METHODS

This study was retrospective in nature involving evaluation and analysis of data obtained from the clinical records of patients diagnosed with TGN between 1st January 2001 and 31st December 2010 and followed up at the Oral Medicine (OM) Clinic of Kuala Lumpur General Hospital (KLGH) until 30th June 2011. Ethics approval for this study was obtained from the Human Research Ethics Committee of the Institute for Medical Research, Malaysia.

To minimize variability amongst the cases, the study was limited to patients who were diagnosed as having TGN by a dental specialist at KLGH. Patients with incomplete/inadequate treatment records, followed up for less than 6 months and who were lost to follow up, were all excluded.

The clinical parameters studied included age (at time of diagnosis with TGN), gender, race, site of involvement, pain descriptor (used to describe the nature of pain), triggering activity, trigger zone, pre-existing systemic conditions such as diabetes mellitus, hypertension or multiple sclerosis, pharmacological agent used for management as well as response to management.

Descriptive statistics was performed using the Statistical Package for Social Sciences software version 17

RESULTS

In the span of 10 years, from 1st January 2001 until 31st December 2010, 72 patients were managed for TGN and of these only 63 patients satisfied the criteria for this study.

Demographic factors

Age of patients at time of diagnosis with TGN ranged from 27 to 81 years with a mean of 58.2 (±12.0) years. The peak incidence was in the sixth decade of life (33.3 %) followed by the seventh decade of life (27.0 %).

Female patients predominated with 37 (58.7 %) cases altogether. This in turn gives a female to male ratio of 1.4:1. However, when the cases were stratified according to race, the gender bias was not present amongst the Chinese and Indian patients.

With regards to the ethnic distribution, the majority of patients seen were Malays (55.6 %) followed by Chinese (27.0 %) and Indians (17.5 %).

Table 1. Gender and racial distribution

RACE	Gender		Total
	Male	Female	
Malay	11	24	35
Chinese	9	8	17
Indian	6	5	11
Total	26	37	63

Medical comorbidities

Of the 63 patients, 27 patients (42.9 %) had a positive history of hypertension and 9 patients (14.3 %) had a positive history of type 2 diabetes mellitus. None of the patients had a positive history for multiple sclerosis, brain tumours, mixed connective tissue disease, central or peripheral demyelinating diseases as well as any other disorders of the central or peripheral nervous system (excluding TGN).

Clinical characteristics

TGN predominantly affected the right side of the face, with 60.3 % of the patients presenting with pain on that side; giving a ratio of 1.5:1 favouring the right side of the face. The mandibular branch was more frequently involved than the maxillary branch of the trigeminal nerve, with 39 patients (61.9 %) having involvement of the mandibular branch of the trigeminal nerve. Of these 39 patients, 28 patients had pain confined solely to the distribution of the mandibular branch of the trigeminal nerve.

The majority of patients (49.2 %) likened the pain experienced during an attack as a severe, sharp, stabbing sensation (lancinating). Other commonly used pain descriptors were “throbbing pain” (19.0 %), “electric-current/electric shock” like

feeling (17.5 %) and "toothache-like"" (11.1 %). Two patients described experiencing a "pulling" type of sensation during these attacks. The most common triggering stimuli/activity was "light/soft touch" (52.4 %). Other triggering activities include eating, speaking, shaving, washing the face as well as smiling.

Table 2. Distribution of TGN according to race and branch or trigeminal nerve

	Branch of Trigeminal Nerve Involved				
RACE	Maxillary (V2)	Mandibular (V3)	Opthalmic & Maxillary (V1 + V2)	Maxillary & Mandibular (V2 + V3)	Total
Malay	11	18	1	5	35
Chinese	8	5	1	3	17
Indian	2	5	1	3	11
Total	21	28	3	11	63

Treatment related

Patients were managed pharmacologically with all patients achieving complete remission of symptoms to varying doses of carbamazepine. Dosage of carbamazepine used to manage the condition were tailored to each individual patient and ranged from 200 mg to 1200 mg per day in divided doses, with the mean dosage of carbamazepine being 553.97 mg (± 260.78 mg). Only the initial effective dose of carbamazepine where symptom remission was experienced by the patient was included in this study.

The dosage of carbamazepine was gradually tapered down depending on the response. Five patients achieved complete remission and did not require sustained long-term pharmacological intervention. Two patients required addition of phenytoin, before symptomatic relief was achieved. The two patients who were non-responsive to single drug therapy were both of the female gender.

As for the patients who achieved complete long-term remission, four were females. Due to the very small numbers and female predominance of TGN in this cohort, no comparisons could be made and no significant conclusions could be drawn from these trends.

Patients were followed for a mean period of 33.7 (± 14.9) months. The most common adverse effect experienced by these patients was somnolence (93.7 %) followed by dizziness (58.7 %). No cases of severe adverse reactions such as thrombocytopenia or toxic epidermal necrolysis were seen amongst this cohort of patients.

DISCUSSION

Demographic factors

The age related findings of this study are similar with many other studies that have reported TGN as a condition that is more frequently diagnosed between the 5th and 8th decades of life.[7,11-13] Even though TGN may be diagnosed in young adults, it is important that these patients undergo thorough neurological examination and assessment to exclude conditions like multiple sclerosis that may present with a similar clinical picture. This is the current practice at this center.

The female predominance observed in this study is in line with other published work.[7,12,13] A previous study of TGN patients in India showed that males were more frequently afflicted with this condition compared to females.[14] One explanation as to why there is a female predominance overall, is the mere fact that on average, females have a longer lifespan than males. Although the gender bias was not seen amongst the Chinese and Indian patients, drawing a definitive conclusion is not plausible due to the relatively small number of these patients in this study.

The racial distribution of the TGN patients is in concordance with the general racial distribution within the Kuala Lumpur area and as such, there is no obvious racial bias amongst Malaysian TGN patients.

Clinical characteristics

Predominant mandibular branch involvement is a feature that has been reported by other studies involving Asian patients as well.[13,15] The low

incidence of TGN involving the ophthalmic division has been reported by many other studies, and as such is not a very surprising finding.[12-15]

However, before drawing conclusions regarding the possible predisposition of Asians towards involvement of the mandibular division in TGN, one must take into account that patients may consult other specialist units for management of TGN. It is highly likely that TGN patients with involvement of the ophthalmic and maxillary branches may have been managed by other specialists such as ophthalmologists or neurologists. As such, patients seen at this unit may not represent the total number of TGN patients seen at this hospital.

Although there were no observed cases with bilateral involvement in our study, a previous study by Loh et al.[13] in Singaporean and Malaysian patients had a 6.8 % incidence of bilateral involvement. The study by Ariyawardana et al.[15] based on a Sri Lankan population on the other hand, did not observe any cases with bilateral involvement. It was suggested by Loh et al.[13] that the higher bilateral involvement could be unique to Asian patients, however, this generalization can only be made after analyzing a larger case series and taking into account the obvious differences amongst Asians of different races.

Treatment related

Management of TGN in most centers is performed through pharmacological means and surgical approaches are only employed in recalcitrant cases that fail to respond to medications. In our center, even though responsive to pharmacological treatment, some patients were given the option for surgical intervention. This option was given because the adverse effects experienced impaired their quality of life and ability to work. However, all of them were not keen on surgical intervention due to their apprehension towards surgery and preferred pharmacotherapy as they felt that they will be able to adjust to the adverse effects experienced. Carbamazepine has been for a long time the first line drug used for management of TGN. Not only is it highly effective, it is also sometimes used as a diagnostic adjunct for confirmation of the condition.

CONCLUSION

The clinical characteristics of Malaysian TGN patients are mostly similar to the patients from other parts of the world. The predominant involvement of the mandibular division of the trigeminal nerve amongst these patients is the most obvious difference observed when compared to Caucasian populations. This finding however needs to be verified by studying a larger series of patients and taking into the account the influence of race/ethnicity when analyzing the data. This study has shown that the racial profile of Malaysian TGN patients seen at the Oral Medicine Clinic is reflective of the overall racial profile of the Malaysian population with no obvious propensity for any one race towards development of this condition.

Most patients were found to have responded well to pharmacological management of TGN using carbamazepine and experienced only mild adverse effects such as somnolence and dizziness. Due to the inherent problems associated with a small sample size, no prognostic indicators or predictive features for the development of TGN were found. Increasing the sample size as well as including the patients seen at other centers/units would perhaps yield more results.

ACKNOWLEDGEMENT

The authors would like to thank the Director of Health Malaysia for giving us permission to publish this paper. We would also like to thank the staff members of the Oral Medicine Clinic KLGH for all their kind assistance.

REFERENCE

1. Classification Subcommittee of the International Headache Society: The international classification of headache disorders. Cephalalgia 2004, 24(1):1–160.
2. Nurmikko TJ, Eldridge PR: Trigeminal neuralgia–pathophysiology, diagnosis and current treatment. Br J Anaesth 2001, 87:117–132.
3. Love S, Coakham HB: Trigeminal neuralgia: pathology and pathogenesis. Brain 2001, 124:2347–2360.
4. Jensen TS, Rasmussen P, Reske-Nielsen E: Association of trigeminal neuralgia with

multiple sclerosis: clinical and pathological features. Acta Neurol Scand 1982, 65:182–189.
5. Devor M, Govrin-Lippmann R, Rappaport ZH: Mechanism of trigeminal neuralgia: an ultrastructural analysis of trigeminal root specimens obtained during microvascular decompression surgery. J Neurosurg 2002, 96:532–543.
6. Miller JP, Acar F, Burchiel KJ: Classification of trigeminal neuralgia: clinical, therapeutic, and prognostic implications in a series of 144 patients undergoing microvascular decompression. J Neurosurg 2009, 111:1231–1234.
7. Siqueira SR, Teixeira MJ, Siqueira JT: Clinical characteristics of patients with trigeminal neuralgia referred to neurosurgery. Eur J Dent 2009, 3:207–212.
8. Tomasello F, Alafaci C, Angileri FF, Calisto A, Salpietro FM: Clinical presentation of trigeminal neuralgia and the rationale of microvascular decompression. Neurol Sci 2008, 29(Suppl 1):S191–195.
9. Scrivani SJ, Mathews ES, Maciewicz RJ: Trigeminal neuralgia. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005, 100:527–538.
10. de Siqueira SR, Nobrega JC, Valle LB, Teixeira MJ, de Siqueira JT: Idiopathic trigeminal neuralgia: clinical aspects and dental procedures. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2004, 98:311–315.
11. Katusic S, Williams DB, Beard CM, Bergstralh EJ, Kurland LT: Epidemiology and clinical features of idiopathic trigeminal neuralgia and glossopharyngeal neuralgia: similarities and differences, Rochester, Minnesota, 1945–1984. Neuroepidemiology 1991, 10:276–281.
12. Katusic S, Beard CM, Bergstralh E, Kurland LT: Incidence and clinical features of trigeminal neuralgia, Rochester, Minnesota, 1945–1984. Ann Neurol 1990, 27:89–95.
13. Loh HS, Ling SY, Shanmuhasuntharam P, Zain R, Yeo JF, Khoo SP: Trigeminal neuralgia. A retrospective survey of a sample of patients in Singapore and Malaysia. Aust Dent J 1998, 43:188–191.
14. Kalyanaraman S, Ramamurthi B: Trigeminal neuralgia--a review of 331 cases. Neurol India 1970, 18(1):100–108.
15. Ariyawardana A: KA, Vithanaarachchi N, Sitheeque M, Ranasinghe AW: Management of Trigeminal Neuralgia– Retrospective Analysis of 61 Patients from Sri Lanka. Asian Journal of Oral Maxillofacial Surgery 2003, 15:171–175.

Corresponding Author:
Hans Prakash Sathasivam
Oral Medicine & Oral Pathology Specialist
Dental Department
Hospital Sultan Ismail
81100 Johor Bahru, Malaysia
Email: hansprakash@hotmail.com