ADA CE Program ARTICLE 3

Prevalence of trigeminal neuralgia

A systematic review

Isabela Porto De Toledo; Jéssica Conti Réus; Mariana Fernandes, DDS; André Luís Porporatti, DDS, Msc; Marco A. Peres, DDS, PhD; Augusto Takaschima, MD; Marcelo Neves Linhares, MD, PhD; Eliete Guerra, DDS, PhD; Graziela De Luca Canto, DDS, PhD

ABSTRACT

Background. The aim of this systematic review was to answer the focused question, "What are the prevalence and the epidemiological characteristics of trigeminal neuralgia in the general population?"

Types of Studies Reviewed. This systematic review included observational population-based studies reporting the prevalence of trigeminal neuralgia (TN). The authors developed specific search strategies for LILACS, PubMed, ScienceDirect, Scopus, Web of Science, and Google Scholar. The authors evaluated the methodological quality of the included studies using criteria from the Agency for Healthcare Research and Quality.

Results. Among 728 studies, the authors selected only 3 for inclusion. Two studies were classified as having low risk of bias and 1 as having moderate risk. The sample size ranged from 1,838 to 13,541 adults. This review identified a higher prevalence of TN in women, ranging from 0.03% (95% confidence interval [CI], 0.01-0.08) to 0.3% (95% CI, 0.16-0.55). The maxillary and mandibular branches of the trigeminal nerve were the most affected. The proportion between women and men who had TN was 3 to 1, and those in the age bracket between 37 and 67 years were the most affected.

Conclusions and Practical Implications. The authors of this review identified a higher prevalence of TN in women older than 40 years that usually affected the maxillary and mandibular branches. Further research is required to validate the prevalence of TN in a well-structured, population-based study without a convenience sample.

Key Words. Review; trigeminal neuralgia; prevalence.
JADA 2016:147(7):570-576
http://dx.doi.org/10.1016/j.adaj.2016.02.014

Classic trigeminal neuralgia (TN) is one of most painful disorders of the orofacial region, and it can be described as recurrent and abrupt electric shocklike pains.[1] TN affects 1 or more branches of the trigeminal nerve, mostly the second or third division.[1] It may last a few seconds and, in some cases, persist up to 2 minutes[2,3]; usually unilateral, TN is more frequent in older populations.[1,4]

Supplemental material is available online.

Classic TN is a neuropathic pain condition that is challenging to diagnose. It follows criteria defined by the International Classification of Headache Disorders, 3rd edition, from the International Headache Society (ICHD-3/IHS) as:

- paroxysmal attacks of pain affecting the trigeminal nerve;
- the pain can be described as sudden, superficial, or stabbing;
- the attacks are similar among patients;
- no neurologic disorder is clinically evident.[1]

Although investigators of some studies have postulated the etiology of TN as idiopathic,[5,6] ICHD-3/IHS has

This article has an accompanying online continuing education activity available at: http://jada.ada.org/ce/home.

described classic TN as developing without apparent cause, other than neurovascular compression, most frequently by the superior cerebellar artery.[1]

The literature suggests a pattern in the population affected by TN, with the population having a mean age of older than 60 years and being mostly women.[7] In addition, the right side and the mandibular branch of the trigeminal nerve are reported most often as affected in those with TN.[7] Furthermore, a population-based retrospective study in the United States from 2003 to 2013 highlighted that the cost to treat TN with prescription drugs, radiofrequency, or surgical procedures surpassed $94 million.[8]

There has yet to be consensus in the literature regarding the prevalence of TN, with only a few studies investigating this topic[9-11] and most of them using convenience samples.[12-17] Convenience samples may overestimate the prevalence of this disease. An accurate assessment of TN prevalence might help researchers understand the affected population, consequently helping diagnose more cases of TN and ways of approaching the disease.

The aim of this systematic review was to answer the focused question, "What are the prevalence and the epidemiological characteristics of trigeminal neuralgia in the general population?"

METHODS

Protocol and registration. Our systematic review was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis checklist.[18] We registered the protocol in the International Prospective Register of Systematic Reviews[19] under number CRD42015024138.

Eligibility criteria. ***Inclusion criteria.*** We included observational studies that reported the population and lifetime prevalence of TN. We did not apply any language, date, or sample restrictions such as age and sex. In this systematic review, we only considered the diagnosis of TN by the criteria of ICHD-3/IHS.[1,20,21]

Exclusion criteria. We applied our exclusion criteria in 2 phases. In phase 1 (reading titles and abstracts) we applied the following exclusion criteria:

- studies in which the participants sampled had another neurologic disease associated with TN;
- reviews, letters, conference abstracts, book chapters;

In phase 2, (reading the full texts) we added the following exclusion criteria:

- studies with convenience samples;
- studies with the same sample (duplicate studies from same authors);
- studies that did not use ICHD-3/IHS as criteria for diagnosis of TN

Information sources. We developed specific search strategies for each of the following electronic databases: LILACS, PubMed, ScienceDirect, Scopus, and Web of Science. More information about the search strategies is provided in eTable 1 (available online at the end of this article). Furthermore, we performed limited gray literature searches through Google Scholar, restricted to the first 100 most relevant articles published in the past 5 years, and hand searched references of the included studies.

Search. We selected and adapted for each database search appropriate truncation and word combinations. We sorted the references and removed the duplicates by using appropriate software (EndNote X7, Thomson Reuters). We conducted all searches from the inception of the respective databases through May 8, 2015.

Study selection. We selected the articles in 2 phases; each phase was performed by 3 reviewers (M.F., J.C.R., I.P.T.). In phase 1, 3 reviewers (M.F., J.C.R., I.P.T.) independently screened the assessment of the titles and abstracts of all studies. During this phase, we excluded studies not fulfilling the eligibility criteria for phase 1.

In phase 2, we screened the full text of the selected articles using the same 3 reviewers (M.F., J.C.R., I.P.T.). We applied the eligibility criteria from phases 1 and 2 in reading of the full texts of the selected articles. The three reviewers worked out any disagreement in either phase by discussion and mutual agreement. If they did not reach a consensus, we contacted a fourth reviewer (A.L.P.) to bring resolution. We based our final selection solely on full-text assessment of the studies.

Data collection process and data items. Two reviewers (M.F., J.C.R) independently collected data from the selected studies. A third reviewer (I.P.T.) assessed the accuracy of the TN-related information collected. The data collected consisted of

- study characteristics (definition, authors, year of publication, country);
- population characteristics (age of participants, demographic features, affected side);
- study design (methods, sample origin);
- outcome characteristics (total sample, prevalence, and main conclusions).

If the required data were not complete, the reviewers attempted to contact the study authors to retrieve any pertinent unpublished information.

Risk of bias in individual studies. We assessed the quality of all the selected articles using criteria published by the Agency for Healthcare Research and Quality (AHRQ).[22] Three reviewers (M.F., J.C.R., I.P.T.) classified the studies with either yes, no, unclear, or not applicable in 11 categories.[23] The same 3 reviewers worked out any differences regarding data analyses. If needed, a fourth reviewer (A.L.P.) was contacted to work out any disagreements.

ABBREVIATION KEY. **AHRQ:** Agency for Healthcare Research and Quality. **ICHD-3/IHS:** International Classification of Headache Disorders, 3rd edition, from the International Headache Society. **N:** No. **NA:** Not available. **PIFP:** Persistent idiopathic facial pain. **TN:** Trigeminal neuralgia. **Y:** Yes.