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Role of ethyl alcohol in the treatment of trigeminal neuralgia

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Abstract

The object of the study was to find a better treatment option and with respect to that, see the effects of ethyl alcohol in the treatment of trigeminal neuralgia. A prospective study was carried out on a total number of 15 patients, diagnosed with trigeminal neuralgia. The confirmation of involved branch was done with the help of diagnostic blocks. Counseling was done that pain will be relieved within next 4-10 days after injection of ethyl alcohol. In all patients 1cc of 70% ethyl alcohol volume by volume was injected in the affected branch of trigeminal nerve. In the meantime carbamazapine[1] was advised to them. There was clear difference in pain relief during first few days of injection and then complete elimination of pain after first and second week. Ethyl alcohol had the remarkable results in the treatment of trigeminal neuralgia.

Keywords: Ethyl alcohol, carbamazepine, trigeminal neuralgia.

Introduction

The International Association for the Study of Pain (IASP) defines trigeminal neuralgia (TN) or tic douloureux, is a syndrome characterized by sudden, usually unilateral, severe, brief, stabbing, lancinating,

recurring pain in the distribution of one or more branches of the fifth cranial nerve[2,3]. It is also called as Tri facial neuralgia, Fothergill disease[5].

The etiology of tic douloureux is not known but one hypothesis for idiopathic trigeminal neuralgia is that there may be compression around the trigeminal root in posterior cranial fossa, possibly due to the superior cerebellar artery becoming atherosclerotic and therefore, less flexible and then pressing on the roots of the trigeminal nerve, causing neuronal discharge[4, 5.] Furthermore, the interference of sensory stimulus with pathology in trigeminal ganglion or retro gasser Ian root may trigger the onset of TN[5].

It may occur at any age, it is usually seen in patients over the age of 50 years[5]. It usually begins as a relapsing disease with pain-free intervals that may last months or years[4]. These intervals typically grow shorter and eventually disappear.

As the disease progresses, patients can have difficulty in talking, eating, and maintaining oral hygiene out of fear of triggering the pain. TN may significantly decrease the quality of life with marked depression and anxiety[6].

This pain rarely occurs during sleep and the patient maybe totally asymptomatic during the episodes. It may involve one or more branches of the 5th cranial nerve, the maxillary branch is more commonly involved, and the least involved is the ophthalmic branch, and when comparing right with left, the right side of the face was affected more commonly (ratio of 1.5:1), which could be explained that it could be due to the narrower foramens (rotundum and ovale) on the right side[7].

The presence of an intraoral or extraoral trigger zone is specific as the zone provokes pain by a mechanical stimulus (chewing, drinking, shaving and applying makeup). This stimulus may lead to misdiagnosis of the pain of dental origin. The trigger zones are usually in cheek, nose, upper lip and

upper teeth, it extends to the lower lip, lower teeth and chin in some people. The trigger zones are usually present in the areas like cheekbone, nose, upper lip and upper teeth and in some people; it also extends to the lower lip, teeth, and chin[8,9].

The management of TN other than surgical is peripheral nerve injections of different chemical agents such as chloroform, boiling water, glycerol, and phenol. Peripheral alcohol injections have also been used, preferably during the first attack, or if the patient is very old.

Patients with serious medical morbidity who cannot undergo invasive surgical procedures safely may benefit from an injection of alcohol into the painful peripheral trigeminal nerve branch[10]. and carbamazepine 200mg as first line of treatment[6].

The best treatment is the one which is convenient for patient, the convenience is elaborated as the treatment which is affordable and has most favourable results[7]. In this study, we want to evaluate the effect of 70% ethyl alcohol injection along with carbamazepine tab 200mg in neuralgic patients regarding the duration of pain relief.

Materials and methods

Study design

A prospective study has been conducted on 15 patients, who were treated with neurolysis therapy using peripheral 70% ethyl alcohol injections and carbamazepine 200mg tab

Study participants

This study was conducted in Prerna Dental, oral & maxillofacial clinic Bagalkot; from 25/1/2019 to 30/1/2022, on a total of 15 patients. Diagnostic criteria were same as proposed by IHS[11]:

Classic

A. Paroxysmal attacks of pain lasting from a fraction of a second to two minutes, affecting one or more divisions of the trigeminal nerve, and fulfilling criteria B and C.

B. Pain has at least one of the following characteristics: Intense, sharp, superficial, or stabbing Precipitated from trigger zones or by trigger factors

C. Attacks are stereotyped in the individual patient

D. There is no clinically evident neurologic deficit

E. Not attributed to another disorder

Symptomatic

1. Paroxysmal attacks of pain lasting from a fraction of a second to two minutes, with or without persistence of aching between paroxysms affecting one or more divisions of the trigeminal nerve, and fulfilling criteria B and C

2. Pain has at least one of the following characteristics

3. Intense, sharp, superficial, or stabbing.

4. Precipitated from trigger zones or by trigger factors

5. Attacks are stereotyped in the individual patient

6. A causative lesion, other than vascular A compression, has been demonstrated by special investigations and/or posterior fossa exploration.

Informed consent was taken from the patients after telling them about the merits and demerits of treatment.

Lignocaine blocks were given to patients for 3 consecutive days to confirm the branch of trigeminal involved. After confirmation, 1cc of 70% ethyl alcohol volume by volume was injected.

Patients were informed that the significant effect of injection will be after 1-2 weeks and for till then „carbamazepine“ was prescribed to them. Follow-up was done in these patients after one week. The patients in which pain was partially relieved were reviewed after further one week.

Statistical analysis

The small number of neuralgic patients precluded statistical analysis.

Results

Out of 15 patients 6 were males and 9 were females. There was no notable effect of gender on treatment. Patients were ranging from 3rd decade to 6th decade of age. There was also not any notable effect of age on treatment. Out of 15, 1 patient was given injection for infraorbital nerve, 2 patients were given injection for mental nerve, 2 patients were given for long buccal nerve and 10 patients were given for inferior alveolar nerve- showing high inferior alveolar nerve involvement frequency.

There was no notable effect of site on treatment. 40% patients i-e a number of 6 patients were completely cured after one week. Rests of the patients were completely cured after 2 weeks. Patients were instructed to come after every 2 months for follow-up; to see if there were any side effects but there were no side effects or complications at all- both during and after treatment.

The effect duration noted of 1cc of 70% ethyl alcohol (volume by volume) for trigeminal neuralgia lasts for 6 months to 2 years.

1cc of 70% ethyl alcohol (v/v) had most significant and remarkable effect on trigeminal neuralgia with no side effects at all; showing:

- No trauma
- No prolong treatments like prescribed drugs
- No expensive surgical/patient discomfort procedures like peripheral neurectomy and cryosurgery.
- Outpatient procedure

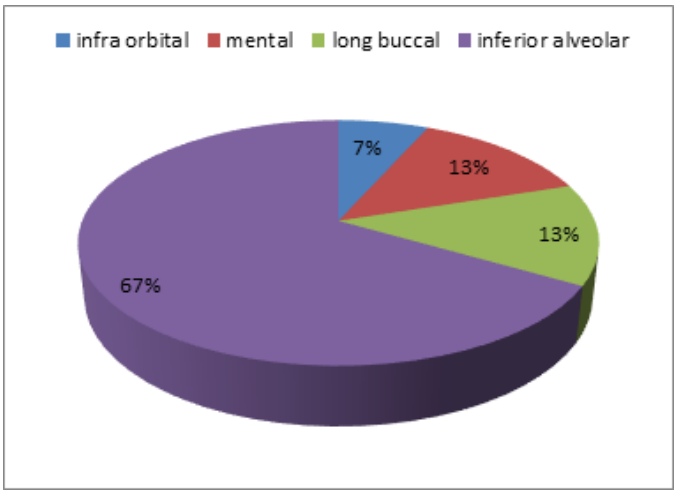
This treatment showed comfort for patient, affordable procedure and long significant results which resulted in patients' satisfaction.

Table 1: Number of patients with ethyl alcohol injected to nerve

No of patients	Ethyl alcohol injected to nerve
1	Infra orbital nerve
2	Mental nerve
2	Long buccal nerve
10	Inferior alveolar nerve.

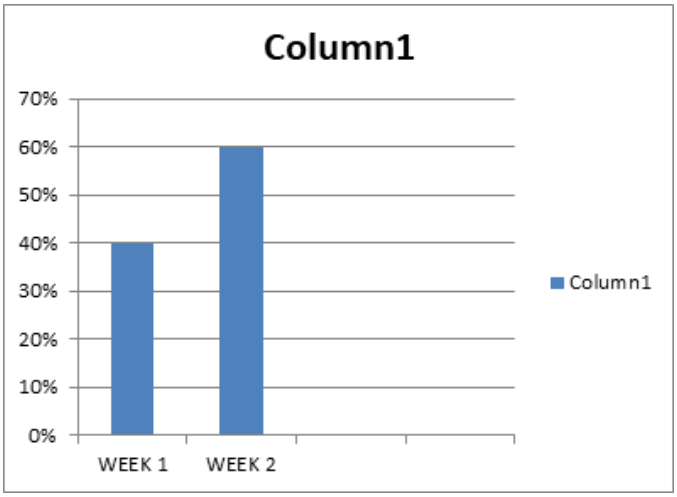
Percentage of Patients with ETHYL ALCOHOL injected to nerve

Graph 1:



Percentage of Patients cured after 1 & 2 weeks of treatment

Graph 2:



Discussion

TN is reputed to be one of the most painful conditions. The diagnosis is based on the patient's history. The use of medications may add to the diagnosis[6]. All new patients are treated medically as response to treatment is, in part, diagnostic. If the patient responds to medical treatment, the clinician can be confident that the correct diagnosis has been made[6].

As a result, patients and practitioners encounter considerable uncertainty when making treatment decisions in TN patients. Medication is often a first line of the treatment and initially effective for most patients with TN[10].

Ethyl alcohol has been used in pain management for many years, Lab at and Greene reported in 1933 that an injection of 33.3 percent alcohol produced satisfactory analgesia in the treatment of painful disorders. It is generally available as a 95 percent solution. Alcohol causes destruction of neural tissue by extracting phospholipids, cholesterol and cerebroside from it and precipitates mucoprotein and lipoprotein. Although 50 to 100 percent alcohol is used as a neurolytic agent, the minimum concentration required for neurolysis has not been established. We have used 70% v/v ethyl alcohol in the treatment of trigeminal neuralgia[5].

Furthermore, few reports have addressed pain relief duration by alcohol block of the peripheral trigeminal nerve. Fardy et al. reported in their retrospective study of 68 TN patients that the median pain-free time for a peripheral trigeminal alcohol nerve block was 19 months for the inferior alveolar nerve, and 13 months for the infraorbital nerve. More recently, McLeod et al. showed that 278 alcohol injections in 49 TN patients had mean action duration of 11 months (1-53 months). Mean pain relief duration in the present study was substantially longer than those previously reported results[12].

In 2007 McLeod NM and Patton DW worked on peripheral alcohol injections in the management of trigeminal neuralgia", they explained that the peripheral

alcohol injections lasted for a mean of 11 months. Their effectiveness and complication rates were not affected by age or repeated administration. Their use did not affect, nor was their effectiveness affected by the use of other surgical treatments[13].

According to Shah SA, Khan MN, Shah SF, Ghafoor A and Khattak A in 2010 after their analysis of 100 cases in "is peripheral alcohol injection of value in the treatment of trigeminal neuralgia. An analysis of 100 cases" they explained that the combination of efficacy and reduced morbidity makes this procedure preferable for the treatment of TN. Alcohol injections are useful in those who are refractory to drug therapy, the elderly, medically com promised patients, unwilling to undergo neuro surgical procedures and in whom surgery is delayed for any reason[6].

Our results are also showing the success of this treatment, as 15 patients were treated with 70% ethyl alcohol which relieved the trigeminal neuralgia pain ranging from 6 months to 2 years.

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