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Ozone Therapy in the Treatment of Symptoms Associated to Trigeminal Neuralgia

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Abstract

Background

Trigeminal neuralgia: Manifests as an extremely intense neuropathic pain that affects the patient's life in all its aspects. The classical -according to the guides -treatment with Carbamazepine has various adverse reactions. Patients have a low compliance too, and stop the treatment. Analgesia through acupuncture was thoroughly studied in the meta-analysis conducted by Vickers et al. on 20,827 patients in 2017. We propose ozone therapy on trigger points as treatment, the antialgic effect of acupuncture being doubled with the trophic effect of the oxygen. Treatment, the antialgic effect of acupuncture being doubled with the trophic effect of the oxygen.

Measures: A 54 years old patient with hemicrania and hypersensitivity on the right side of the face, who spoke with his mouth almost closed, after 12 sessions of ozone therapy, felt no pain, the symptoms were significantly improved.

Intervention: For an objective assessment of the treatment effect, we used VAS (Visual Analog Scale). Patients' compliance to pain assessment is low, but the person feeling it is the only one who can accurately assess its intensity.

Outcomes: Ozone is used in chronic diseases, in treating pain and for rejuvenation purposes, by injections, insufflations, autohemotransfusion and locally applied.

Conclusion: Ozone therapy could be a first line treatment in trigeminal neuralgia, because it has no adverse effects, relief pain and increase quality of life of the patients.

Keywords: Pain; Trigeminal neuralgia; Ozone; Trigger points; Acupuncture; VAS scale

Introduction

Trigeminal neuralgia includes a complex of painful, intensely explosive (electric shock-like) manifestation in the oral and maxillofacial area, sometimes accompanied by sweating or local hypersensitivity. The patient's quality of life decreases dramatically as the pain is often debilitating and becomes chronic if left untreated. The "trigeminal" pain is a complex response from the body to certain stimuli, sometimes generated by inflammation along the trigeminal nerve route (fifth cranial nerve) or its branches (ophthalmic, maxillary, mandibular) [1] (Figure 1). This is a neuropathic, intense, explosive, repetitive and severe pain that lasts a few minutes [2], with a re-entry mechanism that causes

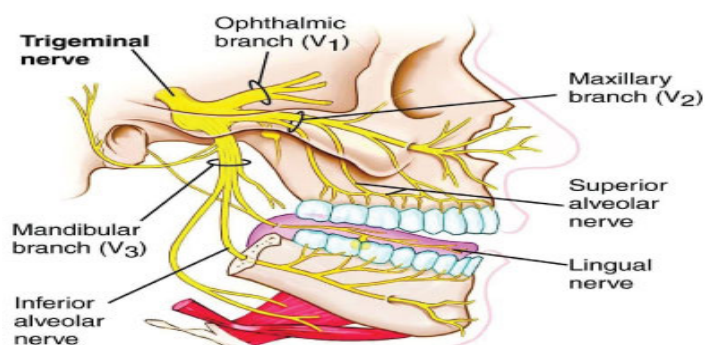


Figure 1: Symptoms Associated to Trigeminal Neuralgia.

enhancement of the sensorial perception. It is virtually a vicious circle.

In 2017, Kesand Matovina classified trigeminal neuralgia in 3 categories:

- a. Classical (continued paroxistic pain)
- b. Secondary (associated with other neurological diseases or cerebral space replacement formations)
- c. Idiopathic [2]

Secondary trigeminal neuralgia with an identifiable cause is rare. The primary idiopathic form is the most common. The trigeminal neuralgia prevalence in the global population is 4/100,000 inhabitants, higher among women aged >50[1/2].

The treatment for trigeminal neuralgia includes analgesic, anti-inflammatory, anticonvulsant medication (Carbamazepine, the treatment of choice according to the European guidelines), antidepressant medications, surgical treatment for nerve branch isolation or even sectioning thereof. Based on our real-world setting observations, acupuncture treatments or ozone therapies are highly likely to cure the patient, especially in idiopathic, recent onset cases (less than 6 months).

Material and Methods

Please find below the case of patient MV, 54 years old, who came in to an alternative medicine centre in Bucharest with right-sided, pulsatile hemicrania, which sometimes woke him up during the night, accompanied by skin hypersensitivity on the right side of the face that was enhanced upon touch or speaking; thus the patient was speaking with his mouth almost closed, in a faint voice and was depressed. Even the slightest air draft or touch of the face would cause the patient pain during the night and wake him up several times a night. The pain had started 4 months before and showed no response to the usual analgesic or anticonvulsant medication (Carbamazepine). Following the first ozone therapy session (subcutaneous infiltrations) on the trigger points on the cranium and face, the intensity of the pain and sensitivity decreased, allowing the patient to speak, smile and even shave without triggering the pain again. After the first 6 sessions, the patient felt no pain during the night and day-time pain, if any, became mild (VAS scale score 4). At the end of the 12-session treatment schedule, the patient had an almost normal skin sensitivity on the right side of the face and no pain.

For an objective assessment of the treatment effect, we used VAS (Visual Analog Scale), published by the World

Health Organisation in 1980, for self-assessment mid-schedule and at the end of the treatment schedule. Patients' compliance to pain assessment is low. The reading of the VAS scale values, although intuitive, is prone to confusion –patients would often ask if they should score the pain already felt, how much of the pain has gone or is still felt. The International Association for the Study of Pain (IASP) defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage". Pain is a symptom and as such the person feeling it is the only one who can accurately assess its intensity. Therefore, various pain assessment tools were developed, the Visual (numeric and analogic) Scale being most commonly used.

Vickers conducted a meta-analysis on 20,827 patients who participated in 39 trials, and found the immediate and long-lasting effect of acupuncture-induced analgesia in chronic pain treatment. Acupuncture analgesia in trigeminal neuralgia is currently researched in a systematic review study announced by Kim Jong-In in 2018; however, the conclusions are yet to be published.

Discussions and Results

Ozone was isolated and studied in 1839, in Basel, by chemist Christian Friedrich Schönbein. Recent studies show that ozone helps relieve the neuropathic pain [3,4]. The ozone molecule contains 3 oxygen atoms, is extremely unstable (20-60 minutes depending on the temperature, humidity, foreign bodies in the solution) and highly oxidising [2]. In metabolic terms, ozone increases the use of glucose in the cells, enhances the protein metabolism and oxidises non-saturated lipids [2].

The physiopathological mechanisms of the ozone are:

- i. Decreases or prevents cellular damage
- ii. Neutralises proinflammatory cytokines
- iii. Inhibit proinflammatory prostaglandins
- iv. Repairs nerve demyelination
- v. Decreases acidosis [1]
- vi. Decreases the oxidising stress [2]

Thus, the effects of the ozone therapy are:

- a. Anti-inflammatory [2]
- b. Pain relieving [1]
- c. Disinfectant

- d. Stimulation of the immune system
- e. Stimulation of circulation in cardiovascular diseases [3]
- f. Protection from ultraviolet rays
- g. Lipid lowering [4].

Ozone is used in chronic, geriatric diseases, in macular degeneration, COPD, arthritis, disc hernia with surgical indication [4], diabetes mellitus (reduces complications)[3], decreases the risk of stroke, neoplasms [3], AIDS (inactivates HIV p24 core protein), SARS [4].

In very large quantities, ozone may have a few disadvantages:

- A. Oxidises the arachnoid acid, stimulating platelet aggregation
- B. Releases free radicals
- C. Causes shortness of breath, which promotes the onset of respiratory diseases [4].

Ozone therapy is also currently used in treating pain antiinflammation, and for rejuvenation purposes, by a few techniques: injecting a combination of oxygen and ozone (7-10%) into the trigger points or the acupuncture points, rectal insufflations or autohemotransfusion, locally applied ozonated olive oil, ozonated water ingestion or gas bath [3].

Conclusion

We consider ozone therapy on the acupuncture points to be the therapy of choice as first-line treatment

in trigeminal neuralgia, as it has no adverse reactions, as compared to Carbamazepine (currently the first intention treatment), which has numerous contraindications and adverse reactions. Patients often refuse medication or, if they do accept it, they stop the treatment prematurely. Hence, the ozone therapy is a significant alternative to avoid any invasive interventions or procedures. Ozone therapy offers patients a better chance to relief pain, decrease attacks frequency, increase quality of life and, last but not least, the chance to benefit from the very few treatments with no adverse reactions.

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Conflict of interest

None.

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