

Case Reports On Patients with Migraine Responding to Ozone Therapy

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Abstract

Background: Migraine is a proceeding or an episodic neurological disorder characterized by recurrent headache, moderate to severe, often in association with a series of symptoms of autonomic nervous system. Approximately 14% of the population suffer from this pathology with a peak incidence between 25 and 55 years of age. In addition, headache is very common in children and adolescents, particularly among teenagers whose prevalence is estimated around 8-23%.

Case results: This report focuses on two cases with recurrent migraine episodes, different for sex and age, that shows the effectiveness of oxygen-ozone therapy also using two different modalities of ozone administration. In both of the cases, a drastic reduction in the frequency and intensity of pain with a consequent reduction in disability and an improvement in some health-related quality of life aspects was observed.

Discussion: A greater number of patients are required to establish the efficacy and tolerability of ozone therapy in headache disorder, for which it is intended a treatment with anti-inflammatory drugs, often also toxic and with adverse effects.

Keywords: Migraine; Oxygen-ozone therapy; Headache; Quality of life

Introduction

Migraine is a chronic or episodic neurological disorder characterized by recurrent headache, moderate to severe, often in association with a series of symptoms of autonomic nervous system. Approximately 14% of the population suffers of this pathology, and up to 18% of women [1] and 6% of men, with a peak incidence between 25 and 55 years of age [2].

Migraine is divided into two forms: migraine without aura, which accounts for around 70-80% of attacks, and migraine with aura, which accounts for around 20-30% of attacks [3]. The pain is mainly unilateral, although it can also occur bilaterally, moderate or severe intensity, it worsens with movement and is associated with nausea and/or vomiting, disturbance of light (photophobia), disturbance noise (phonophobia) and, in some cases, a disorder of odours (osmophobia). Finally, other causes of headache must be excluded [4].

The patient will normally require bed rest, in the dark and quiet environment. The duration of the attacks is between 4 and 72 hours.

Acute medication is often required, being migraine attacks associated with severe and disabling features [5]. Treatment response to acute medication are similar between episodic migraine (0 to 14 headache days per month) and chronic migraine (15 or more headache days per month) there are emerging differences driven by the frequency of use, response, and overall satisfaction [6,7]. Both populations use acute therapies (e.g., analgesics) or migraine-specific agents with vasoconstrictor properties [5,7].

The handling of this disorder is more complicated in children: although relatively infrequent, migraine attacks may deserve daily treatment if they are frightening to the child, or likely to trigger repeated unnecessary imaging studies, such as in hemiplegic migraine. The headache is the most common somatic complaint in children and teenagers. The prevalence is 3% in children aged 3-7 years, 4%-11% in those 7-11 years, and 8%-23% of teenagers [8].

Primary headache (it is not attributed to any other disorder) is the most important cause of headaches in this age group, but a secondary headache (it is the symptom of identifiable, structural, metabolic or

other abnormality) and unusual causes of headache also have to be considered [9].

Ozone is an allotropic form of oxygen, mainly known for its ecological properties, industrial application and healing effects. Several mechanisms of action have been proposed to explain the efficacy of ozone therapy, including analgesic, anti-inflammatory and oxidant action on proteoglycans [10].

The versatility of ozone application is impressive because, if properly utilized, it can be proficient in vascular diseases and surprisingly in orthopaedics and odontology [11].

No more papers describing the application of ozone therapy for the migraine treatment have been found in literature. This report shows two cases of migraine much improved as a result of oxygen- ozone therapy by two different modalities of ozone administration.

Case reports

Case 1

A 10-years-old child came to our clinic "Salute Ok" in Rome, Italy, complaining of headache with vasomotor symptoms, with first onset at the age of 4-5 years and occurrence with daily frequency from the age of 8 years. The child had the right frontal and temporal headache and referred usual appearance of the disorder after an episode of dizziness and after intense workouts (basketball). The symptoms were occasionally associated with nausea. His family history was positive

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for migraine (mother). The child had been formerly visited by several medical specialists, including orthodontists and otolaryngologist, thus excluding other possible causes of headache. The patient reported previous unsuccessful treatments with different approaches, in particular pharmacological therapies, for some years. A physical examination revealed slight scoliosis and slight flat footedness. Our physician recommended a treatment cycle consisting of 10 rectal insufflations (2 insufflations/week) of oxygen-ozone to be performed throughout a 35-day period. The administered dose of ozone was an average of 120 cc of the gaseous mixture with a concentration of 25 parts of ozone in 1000 parts of oxygen. At baseline and at the end of the treatment cycle, the patient underwent an individual assessment of discomfort by means of the self-reported Visual Analogue Scale (VAS), rating from 0 to 10, in order to measure his overall perception of pain [2]. According to the VAS results, pain intensity turned from 9/10 recorded at baseline to 0/10 at the end of the ozone-based treatment. In particular, the patient reported that before the treatment the pain was daily, very intense and often accompanied by nausea. In fact, even his mood was affected by discomfort, and he was always feeling very tired and silent. After only 17 days of treatment, the patient reported an increased sense of wellness and a significant reduction of headache episodes, which completely disappeared immediately after the treatment cycle. Now, 6 months after the end of the therapy, the patient reported to have experienced no more than 2 headache episodes in a month and that he is able to play basket safely with no hassles [2]. Daily functional status and disability were monitored by means of the Short Form-36 Health-Survey (Questionnaire SF-36) [2], composed of 36 items measuring how much the disease has influenced patients' lives [2]. The patient reported that even in the past his disturbance has never compromised his daily life (school, sport, social time) since it used to occur only after sport or physical efforts, however after the ozone-based therapy he feels certainly better in all his daily activities for he has no fear for the occurrence of migraine attacks.

Case 2

A 51-years-old woman, employed as a primary school teacher, came to our clinic "Salute Ok" complaining of apical headache and panic attacks. The patient already suffered from headache during the adolescence with a frequent headache crisis lasting half a day to 3 days. Her family history was positive for migraine (mother and sister). The woman reported previous unsuccessful attempts with several pharmacological (mainly anti-inflammatory drugs) treatments, and to have attended the Migraine Center of an important University Hospital in Rome without obtaining any significant result. Our physician recommended a treatment cycle composed of 15 major ozonated autohemoinfusions (1 infusion twice a week). During this procedure 200 ml of a patient's blood is exposed to an equal volume of gas mixture with a concentration of 30 parts of ozone in 1000 parts of oxygen [6]. During each infusion, the patient's vital signs such as blood pressure, heart rate and oxygen saturation were kept under strict monitoring. After only three infusions the patient reported an improvement in headache as well as in general well-being, feeling less tired. Following the sixth ozone autohemoinfusion the woman reported to have experienced a single headache episode, in concomitance of menstruation, of the duration of one day. At the end of the eighth infusion, the woman reported complete disappearance of the headache, associated with a reduced tiredness at the end of the day, an improvement in mood (especially on waking) and a greater concentration ability [2,3,4,6]. Moreover, the patient reported a significant increase in physical resistance, particularly evident during her regular games of ping pong which is a very wearing sport, occurred in concomitance with the start of the ozone-based therapy. The VAS and

the SF-36 Questionnaire were administered at baseline and at the end of ozone therapy in order to measure the perceived pain and to evaluate the changes in health-related quality of life. According to the VAS, the pain intensity turned from 8/10 to 1/10, as confirmed also by the items 21 and 22 of the SF-36 Questionnaire. Also the other items of this questionnaire demonstrate a clear improvement of the overall health and quality of life; a reduction/disappearance of limitations in physical effort, both as to what concerns working time and performance and in daily activities. A marked improvement was reported by the patient about her emotional state as well.

Discussion

This report wants to underline the importance of the ozone therapy in the treatment of migraine, a common and debilitating disorder in which the use of this application is still to be investigated in depth. In particular, two cases with different characteristics regarding patients' gender and age as well as the modality of ozone administration were shown, both resulting in a drastic reduction in the frequency and intensity of pain. No adverse and toxic effects have been pointed out with this therapy, in contrast to the classical anti-inflammatory drugs generally used for the pharmacological treatment this disease, and also formerly used by both our patients for different years without any result.

Another very important aspect of this report is represented by the improvement in patients' quality of life, still following just a few cycles of ozone therapy. In fact, the observed reduction in both the frequency and severity of migraine attacks corresponded to an evident decrease in disability with consequent improvement in some health-related quality of life aspects, particularly in the social activity domain. In conclusion, the efficacy of ozone therapy in the treatment of headache is appropriate to be evaluated in further clinical studies with a greater number of patients.

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