

Efficacy of Combined Application of Mud Therapy Application Along with Ozone Bagging in Burning Feet Syndrome (Grierson-Gopalan Syndrome) – A Case Report Study

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Abstract

Ozone therapy and mud treatment were administered for three weeks as part of a naturopathic regimen to a female patient who has had Grierson-Gopalan syndrome for a number of years. Following the intervention, there was a significant improvement in electromyography, health-related quality of life (physical functioning) scale, and visual analogue scale. The present case study illustrates how the naturopathy treatment leads to notable improvements in the patient's health outcomes, including decreased inflammation and pain. This case study demonstrates that the patient's health outcomes are significantly improved by naturopathy treatment.

Key Words: burning feet; ozone therapy; mud therapy; naturopathy

Introduction

A collection of symptoms described as "burning feet syndrome," or "Grierson-Gopalan syndrome," result in painful and extremely hot feet. In the feet and legs, burning, tingling, numbness, and a dull ache are the indications and symptoms of burning foot syndrome. Cooling relieves symptoms while heat exacerbates them. There have been several documented reasons, such as low nutritional status and vitamin deficiency. Burning feet were sometimes linked to stomach surgery and tarsal tunnel syndrome.

Patients use the Tamil term "Kal erichal," which means "burning of the feet," to denote their issue. Usually limited to the soles of the feet, the burning sensation can also occasionally be felt in the hands' palms. Usually, a burning feeling starts on the bottom of the foot at the great toe and extends throughout the entire sole. Occasionally, the burning sensation that has advanced higher can impact the dorsum of the foot and the area around the ankle. Although the burning is usually the most severe and debilitating, it can also be rather moderate and bearable. Applying a moist towel to their feet appears to provide some individuals with relief. Some people would rather keep their feet alone since they find it uncomfortable to touch hot or cold surfaces. In addition, the patient reports experiencing "pins and needles" in the extremities' distal regions [1].

Previous studies have shown that low nutritional intake or insufficient physical metabolism lead to the body's deficiency of vital minerals and vitamins, which in turn causes this sickness. Both in Japanese POW camps in the Far East during World War II and the Spanish Civil War, burning agony in the foot was a common occurrence. In tropical regions, inadequate nutrition has been linked to its development [2].

In those trials, the great majority of patients showed concurrent signs and symptoms of riboflavine and other vitamin deficiencies; following treatment with yeast, rice polishings, or Marmite, their condition improved [4]. The burning foot ailment, which is clinically distinct, has been connected to poor diet and vitamin shortages [5].

Patients with neuropathic pain experience negative effects on their social, economic, and psychological well-being [6]. When the financial burden of managing it in the chronic setting is taken into account, the overall economic burden on society is considerably greater [7]. Its prevalence in the general population is estimated to range from 1% to 7-8% [8].

For the assessment and management of neuropathic pain, numerous national and international guidelines and recommendations exist; yet, there is currently no agreement on the appropriate locations for drugs [particularly opioids], neurostimulation, or targeted medication delivery [9]. The terms

"crawling" (formication), "burning," "pins-and-needles" (paresthesia), "tingling," "numbness," "electric shocks," and "shooting" are frequently used in the clinical description of neuropathic pain. Patients may experience pain that is excessively painful in comparison to what would be expected (hyperalgesia) from stimuli that are normally painful, or pain that originates from stimuli that are generally not unpleasant [10].

The foundation of both first- and second-line treatment for neuropathic pain is medication. The best choices include gabapentanoids, tramadol, lidocaine, capsaicin, tricyclic antidepressants (TCAs), and serotonin norepinephrine reuptake inhibitors (SNRIs) [11].

Analgesics and nonsteroidal anti-inflammatory drugs (NSAIDs) are effective in reducing pain. However, chronic drug use can have negative effects on other bodily systems, such as liver and renal damage and gastrointestinal problems [12].

The following are some applications for complementary and alternative medicine (CAM): mind-body interventions; manipulation and body-based procedures (such as massage and chiropractic); alternative energy treatments (such as light therapy and magneto & chromo); biological treatments (such as lotions, creams, and oils). Naturopathy, which embraces the idea of wellbeing and follows a biological diet, is crucial in treating back pain. It includes dietary and lifestyle modifications, chiropractic adjustments, herbal remedies, hypnosis, meditation, and biofeedback [13,14].

Modern scientific knowledge is combined with traditional natural healing methods to practice naturopathy. Treating the root causes of illness and maximizing the body's ability to heal itself are the main goals of naturopathic medicine. According to naturopathy ideology, a sickness is a process as opposed to a distinct thing. Naturopathic therapies are chosen with the patient's environment and lifestyle in mind, together with their physical, structural, psychological, social, and spiritual characteristics [15]. Alternatives include colon irrigation, ozone therapy, balenotherapy, and mud therapy.

The most popular complementary and alternative medicine treatment for improving absorption and managing discomfort. The mechanical, thermal, and chemical effects are linked to the beneficial effects of mud therapy and mineral water (16). When compared to freshwater therapy, Kulisch et al. discovered that mineral water baths had an advantage in lowering pain and enhancing functional status [17].

Ozonotherapy may be able to address the most relevant deficiencies by rectifying dysimmunity caused by a possible primary infection, treating

endogenous chronic oxidative stress by upregulating the antioxidant system, and restoring circulation and oxygen delivery to ischemic regions. Hormones and neurotransmitters are released as a result, most likely causing a surge in serotonin. gives out a strong sense of joy and well-being without having any negative repercussions [18].

When it comes to pain management, mud application and ozone therapy have both shown promise in treating neuropathic pain, arm and limb paralysis, and other conditions. Nevertheless, little research has been conducted to ascertain the combined influence of the two. Therefore, the purpose of this study is to examine the effects of ozone bagging and mud application on burning feet syndrome.

Case Presentation

On September 20, 2023, Miss Shruti, a participant who was 25 years old, went to see the opd at the Maharshi Aurbindo Subharti College and Hospital of Naturopathy and Yogic Sciences. She complained of a severe burning sensation in both of her feet that had been bothering her for a few years. This illness has not run in the family before. For this, the patient is not currently taking medication.

Height of 160 cm, weight of 75 kg, blood pressure of 124/86 mmHg, pulse rate of 76 beats per minute, and respiration rate of 18 cycles per minute are the clinical parameters of the patient. Evaluations and diagnosis: Before and after the treatment, electromyography, the Vas scale, and the HRQol scale were measured.

The Therapeutic Intervention

For one month, the therapy will be offered three days a week (Monday, Wednesday, and Friday).

After washing their feet with water, the patient is required to sit down and allow their feet to dry fully. Next, cover both feet with an ozone therapy bag. Fasten it at the top and bottom. Put the ozone gas at one end of the tube and have another tube ready to release the gas through a charcoal barrier [19] to stop the ozone from escaping.

Once more, ask the patient to lie down in a supine position following the aforementioned method. Using a spatula, the patient will apply the prepared cold mud to their feet after they have been cleaned and neutralized with water. After letting it sit for fifteen minutes, the muck will be scraped off and the feet will be sponged [20].

Monday	Ozone bagging Cold mud application on feet – 15minutes
Thursday	Ozone bagging Cold mud application on feet – 15minutes
Friday	Ozone bagging Cold mud application on feet – 15minutes

Result

Variables	EMG	VAS	HRqol (physical functioning)
Pre test	330	8	9
Post test	475	5	10

Discussion

The current investigation focuses on the potential effects of applying ozone and mud to a patient suffering from burning feet. The results demonstrated a considerable decline in the VAS scale and a significant improvement in the HRQoL and Electromyography. This treatment plan will be helpful for the treatment of because of its efficacy and safety.

The impact of ozone therapy on fibromyalgia was studied by U. Tireli. Patients reported persistent weariness, anxiety, limb weakness and soreness, and sadness as clinical symptoms. There were 65 participants in the study: 10 men and 55 women. Ten patients underwent ozone rectal insufflations, and fifty-five patients underwent autohemotransfusion, according to SIOOT procedures. After receiving the treatment once a week for a month, 45 patients (or 70%) showed considerable improvement (>50% of symptoms resolved) [21].

Research on the subject of Ozone's Effect on Intestinal Epithelial Homeostasis in a Rat Model was conducted by Igor Sukhotnik. In a rat model, the current study aimed to determine if ozone therapy may improve gut intestine mucosal homeostasis. A total of eight adult rats, weighing between 250 and 280 grams, were randomly assigned to one of three experimental groups: For five days, the following treatments were administered to the rats: 1) control rats received 2 mL of water intraperitoneally (IP) and by gavage; 2) O₃-PO rats received 2 mL of an ozone/oxygen mixture IP and by gavage plus 2 mL of water; and 3) O₃-IP rats received 2 mL of water IP and 2 mL of the ozone/oxygen mixture IP. Rats were sacrificed on day six.

measured the bowel and mucosal weight, the villus height and crypt depth, the mucosal DNA and protein, the rate of cell division, and the rate of apoptosis. Treatment with a mixture of oxygen and ozone increases intestinal cell turnover in a rat model. When ozone was given intraperitoneally, it significantly increased the trophic impact of the intestines more than when it was given orally [22].

Conclusion

An improvement in the variables score in GRIERSON-GOPALAN SYNDROME patients is a favorable study finding. It has been demonstrated that including ozone therapy and mud treatment into a routine for treating burning on the soles of the feet improves patient outcomes by lowering pain and inflammation. This case study demonstrates that the patient's health outcomes are significantly improved by naturopathy treatment.

Informed consent- an informed consent was obtained for reporting this case.

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