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A Promising New Therapeutic Modality in the Treatment of Recurrent Vulvovaginitis: Ozone therapy

Sukran Ulger*

Vulvovaginitis is one of the most common diseases diagnosed in the primary health care. It affects 75% of the women once in their life and 40% of them face with recurrent episodes. The term of recurrent vulvo-vaginitis is considered when the disease repeats four or more times per year. The disease is not easily resolved due to the traditional self-treatment modalities and the most important reason is the extensive abuse of antibiotics, fungicides, and vaginal antiseptics. These factors complicate the disease, rises the antibiotic resistance, and worsen the wonderful complex microecological system of the vagina (1).

In healthy women, the vaginal microbiota is dominated by H2O2-producing *Lactobacillus* which maintains the normal acidic environment of the vagina (2). Any change in this microecological system will cause a variety of vaginal infections. The general conventional treatment with antibiotics also destroys this beneficial bacterial flora leading to a more chronic and complex disease. It is necessary to search new treatment modalities that will effectively solve the problem while protecting the balance and function of the vaginal microecological system (3).

Ozone is a trioxygen (O_3), highly reactive inorganic gaseous molecule which is known as the third strongest oxidant molecule in the world. Ozone is a natural part of the atmosphere produced by ultraviolet light and a high-pressure diatomic oxygen in the stratosphere layer. It was discovered in the mid-nineteenth century, however its usage as a medical drug is in recent decades (4). It is known as a strong disinfectant with perfect antibacterial, antiviral, antifungal, and anti-parasitic properties. With a stronger oxidant effect, ozone is an important microorganism killer while protecting beneficial microorganisms and healthy tissue (5). It has been shown that the dominance of lactobacillus come back, and normal vaginal environment is rebuilt after vaginal ozone treatment in the vulvovaginitis patients (3).

Bocci, a physiologist, has studied ozone for long years and identified this new medical drug as a wonder drug of 21st century (5). Ozone has a key role in the human body by directly producing and managing various biological reactions. Some of its benefits to human body are improvement in the blood circulation and delivery of oxygen to the tissues, improving glucose and fatty acid metabolism, systemic and locally disinfection with peroxide formation, and regenerative or trophic properties. Ozone therapy is a controlled oxidative stress to rebuild the antioxidant mechanism for all normal functioning organs, circulatory, immune and other systems of the organism (5).

Ozone can also play a significant role in the treatment of vulvovaginitis since it has some properties such as, strongly killing microorganism without a resistance problem, good trophic properties to rebuild physiologic vaginal layer, and strengthening the immune system to prevent recurrence (3, 5). In a study, it has been shown that treatment with ozone is effective in loss of antibiotic resistance of microorganisms providing re-treatment with these antibiotics. It has particularly beneficial trophic effects on cell ultrastructure and function (6).

The treatment protocol with ozone includes both local and systemic procedures. In vulvovaginitis, systemic application together with vaginal insufflation of ozone or vaginal brush with ozonated water are used with optimal results. Applications are easy and comfortable for the patients (7). Additionally, local ozonated oils are also used in vulvovaginal infections in addition to their extensive use in medical arena for skin infections, cosmetic purposes,

Sukran Ulger graduated from Hacettepe University Faculty of Medicine. She completed his Radiation Oncology specialty at Hacettepe University, Faculty of Medicine, Department of Radiation Oncology between 2003 and 2009. Between 2009-2011, she worked in Ataturk Chest Disease and Chest Surgery Training and Research Hospital. During this time, she set the Radiation Oncology Unit and worked as the director of the unit. In 2011, she started to work in Gazi University Faculty of Medicine, Department of Radiation Oncology as a lecturer. In 2014, she worked as a clinical observer in University of Chicago, Radiation Oncology Department. She got the degree of Associated Professor in 2014. She is a faculty member at Hitit University, Faculty of Medicine, Department of Radiation Oncology. She has participated in many projects about radiation oncology and ozone therapy.

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Department of Radiation Oncology, Faculty of Medicine, Hitit University, Corum, Turkey.
***Corresponding Author:** Sukran Ulger, Tel: +90 5317900492, Email: ulgersukran@yahoo.com

and diabetic leg wounds (8).

In a randomized study complementing ozone therapy with classical modern therapy, twenty-five patients diagnosed as recurrent candida vulvovaginitis with resistant clinical symptoms and positive culture exudates have been treated effectively. Their results showed that ozone eradicated candida albicans more effectively than the traditional treatment (4). Another study showed comparable results, pointing the effectiveness of ozone therapy on candida albicans (9).

As a result, ozone therapy is a new, juvenile medical drug which has a large indication and application field. We need comprehensive, well-designed studies to prove the effectiveness of this biological stimulatory therapy. In the future, we hope that the ozone which is an easy, practical, and effective therapeutic modality will be used in the complementary treatment of recurrent vulvovaginitis extensively.

Ethical Issues

Not applicable.

Conflict of Interests

The author has no conflicts of interest to disclose.

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