



## **LINGUA NIGRA : TRATTAMENTO TRAMITE AQUOLAB ( CASE REPORT )**

### **INTRODUCTION**

Black hairy tongue (BHT) is a benign condition characterized by a discolored, hairy appearance of the dorsal tongue. The prevalence of BHT is not known because its occurrence is highly variable among different populations and dependent on many factors; however, studies have shown that the prevalence may be as high as 11.3% in some populations.

BHT is more common in men, elderly patients, smokers, HIV-positive patients, edentulous patients, and patients with cancer (1). BHT appears as a black membrane or film on the tongue, anterior to the circumvallate papillae.

The lesion is distributed on the dorsal aspect of the tongue and does not involve the lateral and the tip site of the tongue. Visual examination of the tongue reveals hypertrophy and lengthening of the filiform papilla. The papillae become elevated, which gives the black coating a hairy appearance. BHT is a particular subset of a more broad condition called hairy tongue, and a wide range of colors have been described for this condition (2).

The most common discoloration of the tongue in this condition is black to blackish-brown, but it can present with green or yellow discoloration or can lack pigmentation altogether. This disease is often asymptomatic, but sometimes is associated with alitosis, lymphadenopathy, burning or tickling sensation (3). Besides poor oral hygiene, many substances and medications could cause, aggravate, or predispose a patient to BHT, for example, smoking tobacco, excess

consumption of beverages such as black tea, coffee, alcohol, oxidizing mouthwashes, and also intravenous drug use are linked to an increased prevalence of BHT.

Immunocompromised states, HIV, and malignancies are also associated with an increased rate of BHT in men and women (1,2). BHT is a benign, self-limiting condition, and the diagnosis is based on clinical presentation. First-line treatments include avoiding associated medications, practicing good oral hygiene, discontinuing habits predisposing to BHT, and gentle brushing or scraping of the tongue.

Second-line treatments are anecdotal and include oral retinoids, antifungals, antibiotics, trichloroacetic acid, topical urea solution, topical triamcinolone acetonide, vitamin B complex, gentian violet, salicylic acid, and thymol (1). The use of laser in the treatment of this condition is not described in the literature. Association of hydrogen peroxide and diode laser and LED light for the management of periodontal disease is documented (4,5). The aim of this work is to report a case of hairy tongue in a young female patient undergone to antibiotic, treated through a device for oral hygiene "Aqualab" that produce ozonated water.

## **CASE REPORT**

A 18-year-old female patient went to the private practice with a brown color condition of the central part of the tongue accompanied by a slight burn (Fig. 1). The general dental situation was good and she had good oral hygiene. There was no systemic pathology but she claimed to have undergone antibiotic therapy with Amoxicillin 1000 mg for 12 days (2 daily), for dental abscess. A diagnosis of hairy tongue was made and we decided to try to immediately reduce the symptoms by applying ozonated water through Aqualab. It is a dental water jet that mixes water and ozone, resulting in an antimicrobial action on treated surfaces, especially gums. Water and ozone levels are adjustable through 3 ozone concentration programs and 2 for the water dispensing seconds. There are interchangeable nozzles of 0.6 and 0.8 mm opening diameter for the water-ozone mixture dispensing. Two 60-second cycles with program 2 are performed for both water and ozone regulation and then the patient does not perform any final rinse. The same told us the next day a significant improvement in burning sensation and the next one-week control, she returned with almost total remission of the lesion (Fig. 2).

Fig 1



Fig 2



## DISCUSSION

BHT is commonly an asymptomatic condition, patients seek treatment for overall cosmetic reasons. Several medications are associated with an increased risk for the development of BHT. Specifically, antibiotics such as penicillin, erythromycin, doxycycline, linezolid, and neomycin are well documented in the literature (1). First-line treatment consists of education on preventive techniques for patients who are either at risk for developing or who are receiving medications that have been associated with BHT (2).

Reducing the risk of developing BHT may be achieved by practicing good oral hygiene, such as daily tongue brushing with a toothbrush or tongue scraping to promote desquamation of the hyperkeratotic papillae (1,2).

Topical application of baking soda or 3% hydrogen peroxide are also proven effective treatments for BHT. Second-line treatments can include topical and oral retinoids, antifungals, such as fluconazole in the case of co-infection with *Candida* and antibiotics, but there are no sufficient evidence to demonstrate their real effectiveness (1). In this case we have tried to treat the conditions without topical therapy but with a single session of cleaning tongue with ozonated water performed with AcquoLab. The use of ozonated water for the treatment of oral infections is successfully documented in the literature. In a recent study is tested on Oral Candidosis (6). This study was conducted to evaluate and compare the ability of ozonated water and topical clotrimazole in reducing the *Candidal* species colony-forming unit (CFU) count in oral candidiasis.

There was gradual but significant reduction in *Candidal* CFU count in both groups treated, but at the end of the treatment, *Candidal* CFU count reduction in ozone group (60.5% reduction) was more than the clotrimazole group (32.3% reduction). The ozonated water is also analyzed for the treatment of periodontal disease (7). In another recent work the authors concluded that subgingival

irrigation with ozonized water is beneficial adjunct treatment modality to enhance periodontal health with significant role in periodontal therapy.

Some authors have tested this medication in patients with orthodontic therapy. They demonstrated that a single subgingival irrigation of ozonated water can effectively reduce the gingival inflammation in orthodontic patients, which is also reflected in the reduction of LDH enzyme levels (8). An in vitro study demonstrated the activity of ozonated water on *Streptococcus Mutans* and *Enterococcus Faecalis*. This treatment is compared with the NaOCl 2,5%. After irrigation with ozonated water, the viability of *E. faecalis* and *S. mutans* invading dentinal tubules significantly decreased. Notably, when the specimen was irrigated with sonication, ozonated water had nearly the same antimicrobial activity as 2.5% sodium hypochlorite (NaOCl).

The authors also compared the cytotoxicity against L-929 mouse fibroblasts between ozonated water and NaOCl. The metabolic activity of fibroblasts was high when the cells were treated with ozonated water, whereas that of fibroblasts significantly decreased when the cells were treated with 2.5% NaOCl. These results suggest that ozonated water application may be useful for endodontic therapy (9).

The successes of ozonated water therapy against various bacterial and mycotic species in the various fields of oral medicine and also the absence of adverse effects have led us to propose this device in the care of hairy tongue. We have documented a case of therapeutic success against the hairy tongue which could be a starting point for studying the phenomenon and looking for an alternative to the most common treatments of a disorder that afflicts an important proportion of the general population.

AUTORE CASE REPORT DR.SSA C. CASU

## References

1. Gurvits GE, Tan A. Black hairy tongue syndrome. *World J Gastroenterol.* 2014;20(31):10845–50.
2. Aijazi I, Abdulla FM. Linezolid induced black hairy tongue: a rare side effect. *J Ayub Med Coll Abbottabad.* 2014;26(3):401–3.
3. Caccianiga G, Baldoni M, Ghisalberti CA, Paiusco A. A Preliminary In Vitro Study on the Efficacy of High-Power Photodynamic Therapy (HLLT): Comparison between Pulsed Diode Lasers and Superpulsed Diode Lasers and Impact of Hydrogen Peroxide with Controlled Stabilization. *Biomed Res Int.* 2016;2016:1386158.

4. Mahdi Z, Habiboallah G, Mahbobeh NN, Mina ZJ, Majid Z, Nooshin A. Lethal effect of blue light-activated hydrogen peroxide, curcumin and erythrosine as potential oral photosensitizers on the viability of *Porphyromonas gingivalis* and *Fusobacterium nucleatum*. *Laser Ther.* 2015 Mar 31;24(2):103-11.
5. Femiano F, Femiano R, Lanza A, Lanza M, Perill L. Effectiveness on oral pain of 808-nm diode laser used prior to composite restoration for symptomatic non-cariou cervical lesions unresponsive to desensitizing agents. *Lasers Med Sci* 2017 Jan;32(1):67-71.
6. Khatri I, Moger G, Kumar NA. Evaluation of effect of topical ozone therapy on salivary Candidal carriage in oral candidiasis. *Indian J Dent Res.* 2015 Mar-Apr;26(2):158-62.
7. Sandeep S Katti, Vijay Kumar Chava. Effect of Ozonised water on Chronic Periodontitis - A Clinical Study. *Journal of International Oral Health.* Sept-Oct 2013; 5(5):79-84.
8. K Dhingra, KL Vandana. Management of gingival inflammation in orthodontic patients with ozonated water irrigation-a pilot study. *Int J Dent Hygiene* 9, 2011; 296–302.
9. Nagayoshi M(1), Kitamura C, Fukuizumi T, Nishihara T, Terashita M. Antimicrobial effect of ozonated water on bacteria invading dentinal tubules. *J Endod.* 2004 Nov;30(11):778-81.