# Black hairy tongue recurrence after antibiotic therapy with various agents: A susceptibility of unknown mechanism?

Clinical Case


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## Abstract

Introduction: Black hairy tongue consists in the hypertrophy and elongation of the lingual papillae which implies a change of colour in the tongue dorsum surface. The underlying mechanisms are not well understood, to date has been linked with antibiotic use among other causative agents but there is a lack of strong evidence in this correlation.
Clinical case: A 61-year-old woman presented a black hairy tongue in the postoperative days following an endolaryngeal microsurgery. By that time, she had just started the intake of amoxicillin-clavulanic acid. Reinterrogating the patient, she had a previous episode after the intake of clarithromycin years before.
Discussion: The case exposed supports the role of antibiotics as trigger of black hairy tongue and furthermore establishes the first case reported to date with clarithromycin as trigger. The fact that our patient presented two episodes triggered with two different antibiotics might be explained by an individual susceptibility not described to date.


Keywords: Black hairy tongue, Antibiotic therapy, Clarithromycin


## Introduction

Black hairy tongue is a self-limited benign pathology caused by hypertrophy and elongation of the lingual papillae, and causes a change in the color of the dorsum of the tongue. Its pathophysiology and etiology are uncertain; it is related to predisposing factors such as alcohol intake, tobacco use, excessive coffee consumption, lack of oral hygiene, radiotherapy of the head and neck, xerostomia or the use of antipsychotic drugs and antibiotics. We present a case of a patient who presented with recurrent black hairy tongue in relation to oral antibiotic therapy.


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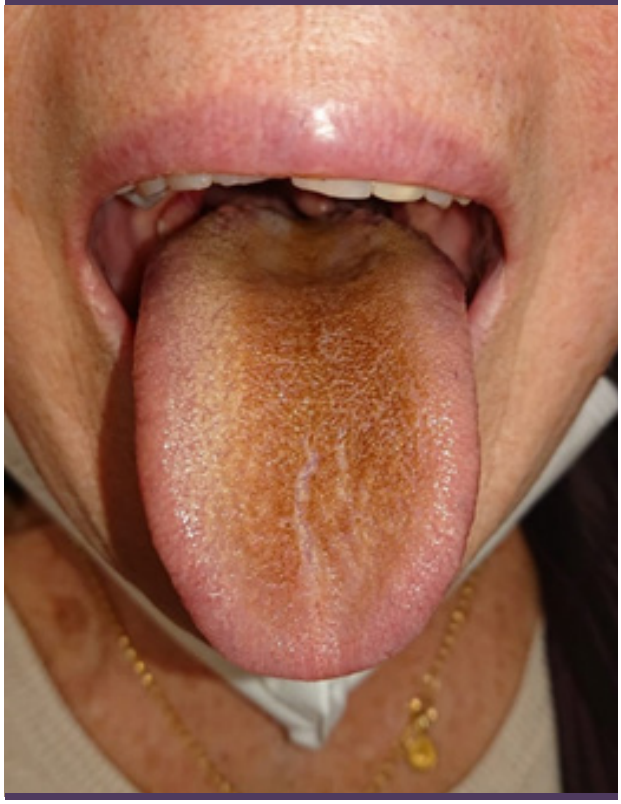
## Clinical Case

A 61-year-old female patient, with a history of excision of an epiglottic angioma by endolaryngeal microsurgery, came to the emergency room on the 4th postoperative day due to a change in the color of her tongue. Given the history, the first suspicion was a possible lingual hematoma, although the only reported symptom was dysgeusia. Oropharyngeal examination revealed a brownish discoloration of the dorsum of the tongue, with hypertrophy of the papillae (Figure 1). The patient was being treated with amoxicillin 750mg/8h and tapering prednisone. She presented a similar episode 2 years earlier, associated with clarithromycin 250mg / 12h. She was now diagnosed with black hairy tongue and the antibiotic regimen was changed to ciprofloxacin 500mg/12h for the remaining 2 days of treatment, in addition to tongue brushing. At the control observation 2 weeks later, the patient was asymptomatic and her tongue had recovered its normal color.

**Figure 1**
Brownish discoloration of the dorsum of the tongue with elongation of the filiform papillae, sparing the tip and side of the tongue



## Discussion

Black hairy tongue is a self-limited benign pathology caused by hypertrophy and elongation of the lingual papillae. This pathology is characterized by the color change of the tongue's dorsum, sparing the caliciform papillae, the tip and the sides of the tongue. Although it is known for its classic blackish coloration, you can also find brownish, greenish or yellowish discolorations. Frequently it is asymptomatic, being the aesthetic alteration the only reason for consultation; although occasionally it can be associated with dysgeusia, halitosis, nausea or burning mouth syndrome.

Its prevalence is little known, and different studies place it between 0.6% and 11.3%, being highly variable between different populations. It is more common in men, the elderly, smokers, edentulous, patients with HIV and cancer patients.[2]

The pathophysiology of this process has not been completely clarified, it would be caused by an alteration in the natural desquamation process of the mucosa of the dorsum of the tongue, mostly populated by filiform taste buds. This alteration would cause an accumulation of keratinized cell layers on the papillae, allowing the accumulation of debris and exogenous pigments, thus favoring the growth of fungi and microorganisms capable of synthesizing porphyrins, such as Porphyromonas gingivalis; that could contribute to the change in coloration of the mucosa[1]. On the other hand, the hypertrophy and accumulation of cell layers in the filiform taste buds of the tongue is the cause of its hairy appearance[3].

Its etiology is uncertain, it has been related to multiple predisposing factors such as alcohol intake, tobacco use, excessive coffee consumption, lack of oral hygiene, head and neck radiotherapy, xerostomia, antipsychotic drugs and antibiotics. Among the antibiotics with which it has been related, we mention cephalosporins, penicillins, tetracyclines or linezolid. To date, there are multiple case reports related to taking amoxicillin-

clavulanic acid[4,5]. However, no cases reported in the literature have been found in relation to clarithromycin. The only case we found in the literature is a patient receiving concomitant treatment with amoxicillin and clarithromycin, so ours would be the first published case apparently associated with the isolated intake of clarithromycin as a trigger for black hairy tongue[6]. Regarding its relationship with antibiotics, it is a matter of debate whether the black hairy tongue would be caused by an alteration of the microflora of the oral cavity or if it is due to the alteration of the physiological process of desquamation. The recurrence that occurred in the case presented could support the theory of an alteration in the microflora of the oral cavity caused by taking antibiotics in a predisposed patient. Cases that would support the theory of altered desquamation are those related to EGFR (epithelial growth factor receptor) inhibitors, such as erlotinib or lapatinib, or the greater frequency in patients who take a mashed diet, possibly related to the absence of scraping of the superficial layers of the dorsum of the tongue during chewing[1]. In the differential diagnosis of this pathology, hairy leukoplakia, acanthosis nigricans and black hairy pseudotongue should be included[2]. Its treatment is the cessation of the causative factor, modification of the predisposing factors and mechanical debridement by tongue brushing. Rinses with baking soda or 3% hydrogen peroxide have also been shown to be effective. Antifungals have not been shown to be beneficial for the treatment of this pathology. The prognosis is favorable, with resolution in days or weeks. Resistant cases, in which a tumor origin or systemic pathology should be ruled out, can be treated by CO2 laser vaporization[1].

## Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

## Data Confidentiality

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

## Protection of humans and animals

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the 2013 Helsinki Declaration of the World Medical Association.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## Availability of scientific data

There are no datasets available, publicly related to this work.

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