**DOI:** 10.4274/ejgg.galenos.2025.2024-12-9
Eur J Geriatr Gerontol 2025;7(2):137-138

# Black Hairy Tongue in a Geriatric Patient with Acute Kidney Injury

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**Dear Editor,**

A 68-year-old male patient with a history of hypertension, previous pancreatitis, and radical prostatectomy, due to prostate adenocarcinoma 3 years ago, was diagnosed with lung adenocarcinoma, as a secondary malignancy, and related cranial metastasis during routine follow-up. During his postoperative follow-up in the thoracic surgery department, a decrease in his oral intake, high fever and disorder in renal function tests were detected. The patient was transferred to the nephrology clinic with the preliminary diagnosis of prerenal acute kidney injury and a drug-related kidney injury. He was routinely using nebivolol, indapamide and had a 60 pack-year smoking history (ex-smoker). Urea: 57.2 mg/dL, creatinine: 4.51 mg/dL (2 months ago creatinine: 0.83 mg/dL), glomerular filtration rate (GFR): 12 mL/min./1.73 $m^2$, K+: 3 mmol/L, Na+: 143 mL/L, C-reactive protein: 216 mg/L were detected. In the patient who was receiving antibiotic therapy due to pneumonia in the postoperative period, blackening was noticed in the patient's tongue on the 14$^{th}$ day of fluconazole, the 8$^{th}$ day of vancomycin and the 14$^{th}$ day of imipenem (Figure 1). Antibiotic-related black hairy tongue (BHT) was initially considered. The patient's current antibiotic therapy was stopped, moxifloxacin treatment was initated. The patient's urinary ultrasonography findings were normal, and improvement in renal function was achieved with intravenous hydration. The patient, whose urine output was sufficient and whose creatinine values regressed to 0.55 mg/dL, showed regression was achieved in the tongue lesion with oral hygiene support after an antibiotic change, and was discharged (Figure 2).

BHT is defined as defective desquamation of filiform papillae and although it may be distressing for the patient, it is generally a transient benign clinical condition. Increased keratinized layering, superimposition of bacterial or fungal infections

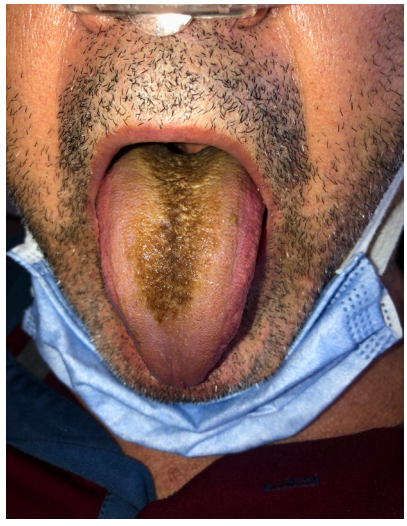

**Figure 1.** Black hairy tongue observed after 14 days of antibiotic therapy.

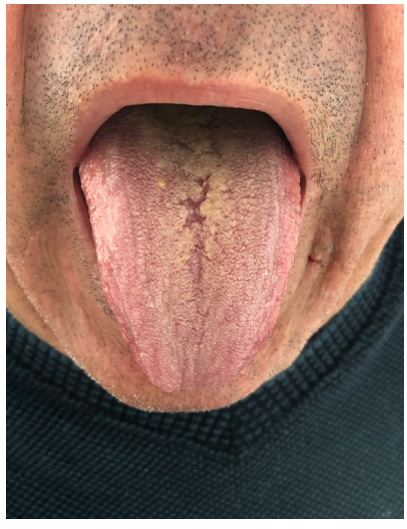

**Figure 2.** Regression of the black colour after cessation of the potential antibiotics

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**Received:** 31.12.2024 **Accepted:** 14.03.2025 **Epub:** 21.07.2025 **Publication Date:** 14.08.2025
**Cite this article as:** Alp A, Gibyeli Genek D, Huddam B. Black hairy tongue in a geriatric patient with acute kidney injury. Eur J Geriatr Gerontol. 2025;7(2):137-138

have also been implicated. Changes in the chemical and morphological structure of the intraoral milieu are the basic underlying problem. Although global risk factors have not been clearly defined, interestingly, advanced age and kidney damage may be facilitating factors in the development of BHT. Changes in the oral microbiota-especially the tongue coating microbiota-are well described and common in patients with kidney damage. In the study by Luo et al. (1), species such as Capnocytophaga and Leptotrichia were shown to be positively correlated with erythrocyte glomerular filtration rate in patients. Ezzatt et al. (2) reported that the frequency of dry mouth increased in chronic kidney disease patients undergoing hemodialysis, and approximately half of the patients were found to have increased tongue coating. Chung et al. (3) reported that patients with chronic kidney disease had thicker tongue fur compared to the control group. Oral frailty is a clinical entity of increasing importance in geriatric patients. It is limited not only to its "local" effects but also related to systemic frailty (4). The presence of an oral uremic microenvironment and factors such as decreased saliva secretion, due to direct effects on the salivary glands, and oral dryness, due to restricted fluid intake, may lead to oral hygiene disorders. Increased chewing and periodontal problems, some medications used in the course of kidney damage, and mouth breathing due to acidosis may lead to oral hygiene disorders in elderly and kidney-damaged patients. Underlying kidney injury in geriatric patients, may facilitate the development of BHT.

In addition to etiological factors such as malignancies, markedly poor oral hygiene, intense exposure to tea/coffee and smoking, exposure to different antibiotics has been implicated. Among these, those reported in geriatric patients are ampicillin-sulbactam, co-amoxiclav, metronidazole, moxifloxacin, ceftazidime, piperacillin-tazobactam and linezolid. Liu et al. (5) found a similar appearance after ceftazidime treatment in a peritonitis patient who underwent CAPD. In the literature, cases of BHT due to both imipenem/cilastatin and piperacillin-tazobactam have been reported, albeit rarely, as in our case (6). Interestingly, BHT developed in our patient despite the simultaneous use of fluconazole, which can be used in the treatment of BHT (7). Fluconazole treatment seems to be effective in BHT patients, particularly Candida species are involved in the etiology. The lack of response to fluconazole treatment in our patient may be due to the absence of a fungal etiology or the heterogeneous immune suppressive status (due to kidney injury, underlying malignancy, septic condition). Another point is that BHT regressed in the patient despite the continuation of treatment with moxifloxacin, which has been reported as one of the antibiotics associated with BHT (8). In geriatric patients with kidney injury, the use of some broad-spectrum antibiotics may especially cause BHT.

### Ethics

**Informed Consent:** Informed consent was obtained from the patient.

### Footnotes

### Authorship Contributions

Surgical and Medical Practices: A.A., Concept: A.A., D.G.G., Design: A.A., D.G.G., Data Collection or Processing: A.A., B.H., Analysis or Interpretation: A.A., Literature Search: A.A., Writing: A.A., B.H.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

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