

Glycopyrrolate-Induced Black Hairy Tongue

Sir,

A 64-year-old male HIV-negative patient, presented with a complaint of black discoloration of tongue. He was on glycopyrrolate 1 mg twice per day orally for treatment of parotid fistula, which he developed after right superficial parotidectomy for pleomorphic adenoma. After 2 weeks of glycopyrrolate therapy, he noticed a black discoloration of the tongue, which started from the posterior central part of the dorsum of the tongue and gradually involved middle and anterior part. He was not taking any other medication. He was a nonsmoker, nonalcoholic, and denied excessive consumption of coffee or tea. A local examination of the oral cavity revealed black staining of the filiform papillae on the dorsum of the tongue [Figure 1]. The lateral margins of the tongue were normal. The discoloration could not be wiped by gauze. The patient was edentulous. Buccal mucosa was normal. Cervical lymph nodes were not



Figure 1: Black discoloration of the dorsal surface of tongue

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palpable. With the provisional diagnosis of glycopyrrolate-induced black hairy tongue, we stopped his medication and advised him to clean his tongue with a soft toothbrush twice daily. Two weeks later, black discoloration of tongue disappeared. The causality assessment in this case, as per the World Health Organization-Uppsala Monitoring Centre scale,^[1] was “probable.”

Glycopyrrolate is a quaternary ammonium structure that competitively inhibits acetylcholine receptors in salivary glands and other peripheral tissues. Thus, indirectly, it decreases saliva production and causes xerostomia. It is used as adjunctive therapy in the treatment of peptic ulcer and as a preanesthetic agent to decrease secretions.

Black hairy tongue is a self-limiting disorder characterized by abnormal hypertrophy and elongation of filiform papillae on the surface of the tongue. Defective desquamation prevents normal debridement resulting in excessive growth and thickening of the filiform papillae that then collect debris, bacteria, fungi, or other foreign materials which contribute to the discoloration.^[2] The tongue can appear black, brown, yellow, or green.^[2] Black hairy tongue affects mainly the posterior part of the dorsum of the tongue, especially centrally and then spreads laterally and anteriorly. The involvement of other parts of the tongue is relatively rare.^[3] The course of black hairy tongue is usually asymptomatic, but it can present with metallic taste, halitosis, dysgeusia, and gagging.

The etiology of black hairy tongue is unclear, but the disorder has been associated with numerous predisposing conditions and medications. Predisposing factors include poor oral hygiene, edentulous patients, male sex, older age, smoking, excessive black tea or coffee consumption, heavy alcohol consumption, advanced cancer,

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HIV infection, trigeminal neuralgia, graft-versus-host disease, and radiation exposure to the head and neck.^[3,4] Medications include antibiotics (penicillin, cephalosporin, chloramphenicol, streptomycin, clarithromycin, and tetracycline), corticosteroids, lansoprazole, EGFR inhibitors, oxygenating mouth rinses, and psychotropics (amitriptyline, clomipramine, imipramine, desipramine, maprotiline, tranlycypromine, chlorpromazine, fluoxetine, paroxetine, thiothixene hydrochloride, olanzapine, benzotropine mesylate, and clonazepam).^[5,6]

The exact mechanism of drug-induced black hairy tongue is not known. Antibiotics use may cause black hairy tongue by altering oral flora and leading to trapping of foreign material and overgrowth of chromogenic microorganisms. Proton pump inhibitors (PPIs) decrease gastric acid production, which leads to an increased pH in the stomach and the oral saliva. Increased oral pH could affect oral microbial growth. PPIs can also influence oral microbial growth by causing decreased saliva production.^[7] Drugs causing xerostomia also predispose patients to develop black hairy tongue. Saliva helps in the maintenance of the ecological balance in the oral cavity. It helps in debridement, mechanical cleansing, and carbohydrate clearance, has direct antibacterial activity, and maintains pH in the oral cavity.^[8] In the dry mouth, the protective function of saliva is lost, which predisposes to black hairy tongue. In the present case, besides glycopyrrolate-induced dry mouth, other predisposing factors for black hairy tongue were old age, male gender, and edentulism.

Black hairy tongue is generally a self-limiting disease and carries a good prognosis. Treatment includes discontinuation of potential offending agents, maintaining good oral hygiene, gentle debridement with a soft toothbrush or tongue scraper, sodium bicarbonate mouthwashes, chew gum, or suck a peach stone.^[9] Topical tretinoin may be effective.^[10]

Glycopyrrolate is known to cause xerostomia, which in turn is a predisposing factor for black hairy tongue. However, we could not find reports of black hairy tongue with glycopyrrolate. Hence, we wish to highlight the possibility that glycopyrrolate can induce black hairy tongue. The patient on glycopyrrolate therapy should

be advised to maintain good oral hygiene and oral hydration and increase daily consumption of raw fruits and vegetables.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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