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Case Report

Pantoprazole induced black hairy tongue: a case report

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ABSTRACT

Black hairy tongue (BHT) is characterized by abnormally hypertrophied and elongated filiform papillae, appearing as blackish discoloration on the dorsal surface of the tongue. BHT has been reported as an adverse drug reaction to different categories of drugs. However, pantoprazole induced BHT has been rarely reported. We present the case of a 42-year-old female, admitted in the surgery ward with postoperative wound infection, for which she was prescribed oral clarithromycin and pantoprazole. On the third day of starting medications, she complained of blackish discoloration on the dorsal surface of the tongue with an alteration of taste sensation, which was clinically and microscopically diagnosed as BHT. Suspecting BHT as an adverse drug reaction to pantoprazole, it was stopped, while clarithromycin was continued for the full course. She was also advised to scrape her tongue thrice daily, drink adequate fluids and maintain good oral hygiene. On the third day after stopping pantoprazole, black discoloration and alteration of taste sensation resolved completely. WHO-UMC causality assessment scale showed a 'probable' association of the adverse drug reaction with pantoprazole. Physicians should be aware of the possibility of BHT with the use of pantoprazole and that it completely resolves on stoppage of the drug, mechanical debridement and good oral hygiene.

Keywords: BHT, Pantoprazole, Adverse drug reaction, Surgical wound infection

INTRODUCTION

Black hairy tongue (BHT) is a painless, benign condition characterized by abnormally hypertrophied filiform papillae on the dorsal surface of the tongue.[1] It is also known as keratomycosis linguae, melanotrichia, lingua villosa nigra and hyperkeratosis of tongue.[2] Hairy tongue is prevalent in 0.4% of south Asian population.[3] Hairy tongue commonly appears black or brown; however, yellow, green and blue appearances have also been reported.[4] BHT is usually asymptomatic, but some patients experience alteration of taste sensation, malodour itching or burning of the tongue.[5] Its aetiology and pathophysiology have not been fully explained. Smoking, consumption of heavy black tea or coffee, poor oral hygiene associated with HIV, malignancy, trigeminal neuralgia, and medications like antipsychotics, methyldopa, antidepressants, anticancer medicines and antibiotics have been reported to cause BHT.[6,7] The purpose of this article is to present a case of pantoprazole induced BHT, which has been rarely reported till date.

CASE REPORT

A 42-year-old female reported to the Surgery outpatient department with complaints of discharge of pus from the hernia repair wound. She was diagnosed with postoperative wound infection and was admitted in the Surgery ward for treatment. After sending pus from the wound for culture and sensitivity testing, she was started on empirical therapy with oral clarithromycin 500 mg to be taken twice daily. She was also started on oral pantoprazole 40 mg to be taken once daily as a prophylaxis for drug induced gastritis. On the third day after starting the medications, she noticed a blackish discoloration on the posterior part of the dorsal surface of the tongue. She also complained of an alteration of taste sensation. There was no history of pain, itching, burning sensation, bad

breath or bleeding from the tongue. She had no history of smoking, tobacco chewing or other addictions. There was no history of consumption of coloured food items. On examination, blackish discoloration was seen on the posterior one-third of the dorsal surface of the tongue. Oral hygiene was satisfactory. Her routine blood investigations were within normal limits. Histopathological examination of tongue scrapings revealed keratinized and hypertrophied filiform papillae. A provisional diagnosis of BHT caused as an adverse drug reaction to the administered drugs was made based on clinical and microscopic examinations after ruling out other possible aetiologies of BHT. Suspecting pantoprazole as the causative drug causing BHT in the patient, the treating physician advised to stop pantoprazole in the patient. As the pus culture sensitivity report of the surgical wound showed susceptibility of the organism to clarithromycin, it was continued. She was asked to scrape her tongue gently with a soft toothbrush thrice daily, have adequate hydration and to maintain proper oral hygiene. After stopping pantoprazole, the blackish discoloration and alteration of taste sensation started improving. On the third day after stopping pantoprazole, the tongue resolved to its normal texture with proper taste sensation. Pantoprazole was not reintroduced in the patient. The ten-day course of clarithromycin was completed by the patient without further occurrence of BHT. In this case WHO-UMC causality assessment scale showed a 'probable' association of the adverse drug reaction with the pantoprazole (Table 1).

Table 1: WHO-UMC causality assessment scale.

Causality term	Assessment criteria
Certain	Event or laboratory test abnormality, with plausible time relationship to drug intake. Cannot be explained by disease or other drugs Response to withdrawal plausible (pharmacologically, pathologically) Event definitive pharmacologically or phenomenologically (i.e.an objective and specific medical disorder or a recognised pharmacological phenomenon) Re-challenge satisfactory, if necessary
Probable/ likely	Event or laboratory test abnormality, with reasonable time relationship to drug intake Unlikely to be attributed to disease or other drugs Response to withdrawal clinically reasonable Re-challenge not required
Possible	Event or laboratory test abnormality, with reasonable time relationship to drug intake Could also be explained by disease or other drugs Information on drug withdrawal may be lacking or unclear
Unlikely	Event or laboratory test abnormality, with a time to drug intake that makes a relationship improbable (but not impossible) Disease or other drugs provide plausible explanations
Conditional/ unclassified	Event or laboratory test abnormality More data for proper assessment needed, or Additional data under examination
Un-assessable/ unclassifiable	Report suggesting an adverse reaction Cannot be judged because information is insufficient or contradictory Data cannot be supplemented or verified

Figure 1: Pantoprazole induced black hairy tongue.

DISCUSSION

The first case of BHT was documented in 1557 by Dr. Amatus Lusitanus, who described the condition as self-renewing of the tongue.[1] Pathophysiology of BHT has not been fully elucidated. It is thought to arise from defective desquamation of the dorsal surface of the tongue, which prevents normal debridement, leading to accumulation of keratinized layers and a hair-like appearance. Normally less than 1 mm in length but the elongated papillae can reach a length of 12-18 mm and width of 2 mm. These then secondarily collect fungi, bacteria, and debris.[8]

Drug induced BHT have been frequently associated with the use of psychotropic drugs, anticancer drugs and antibiotics. Pantoprazole is a widely used proton pump

inhibitor (PPI)for the treatment of gastroesophageal reflux disease and prophylaxis for drug-induced gastritis. BHT has not been mentioned as a possible adverse reaction of PPI in the tertiary literature but there are isolated case reports of PPI induced BHT.

In 2009, 6 cases and 87 cases of PPI-induced BHT were reported in the database of the Netherlands pharmacovigilance centre lab and WHO database respectively. Of the 6 cases from the Netherlands database,5 cases were due to Omeprazole and 1 case was due to pantoprazole. Of the 87 cases in the WHO database, 40 cases were due to omeprazole, 22 cases due to lansoprazole, 12 cases due to esomeprazole, 8 cases due to pantoprazole and 5 cases due to rabeprazole.[9] Hence, these reports show that BHT due to Pantoprazole is less frequently encountered as compared to other PPIs. Aryal et al reported a case of Lansoprazole induced BHT in 2017.[6]

PPI induced BHT is possibly due to alteration of the pH of gastric acid in the stomach and a decrease in saliva production which may lead to defective desquamation of the dorsal surface of the tongue thereby accumulating a keratinized layer and allowing the growth of candida species and porphyrin producing chromogenic organisms in the oral flora giving the characteristic colour. Accumulation of keratinized layer causes hypertrophy and elongation of filiform papillae.[10,11]Another possible explanation is the use of red, black and yellow ferric oxide in capsules and tablets as a colorant which accumulates as debris with overgrowth of bacteria and yeasts which lead to synthesis of porphyrin producing chromogenic organisms resulting in BHT.[12]

BHT presents with yellow to black tongue discoloration which may be associated with a burning sensation and taste alteration. Our patient presented with blackish discoloration and taste alteration which were similar with 3 cases in the Netherlands report. Time of onset of BHT with PPI has been shown to vary from 2 days to 2 years. Similarly, resolution of BHT after stopping the offending medication is also variable. This could indicate that two different mechanisms for PPI induced tongue discoloration exist: altered microbial flora and discoloration by the colorant used in the capsule or tablet. In our case the onset and resolution of BHT were within 3 days of starting and 4 days of discontinuing pantoprazole respectively which is similar with 2 cases due to omeprazole in the Netherlands report.

Use of antimicrobials may predispose to BHT induced by PPI. Among the PPI induced BHT cases in the 2009 WHO database, 24 cases were associated with concomitant therapy with antibiotics. Local and systemic antibiotics significantly alter oral flora, thus potentially predisposing the patient to develop BHT. This alteration of oral flora predispose to trapping of foreign material and stimulate local microbial overgrowth that lead to color change with delayed desquamation of cells in central column of filiform papillae and marked retention of secondary papillary cells that express hair type keratins.[13]In our case, the use of clarithromycin could have served as a predisposing factor but it cannot be positively concluded as the patient resolved after stopping Pantoprazole alone while clarithromycin was given for the full course.

BHT can be successfully managed by stopping the offending agent, mechanical debridement like tongue scraping, maintaining good oral hygiene and adequate hydration.[14] In our case also the BHT resolved completely with these measures and no drug therapy was needed to treat it. Our report clearly indicates that BHT is reversible and unlikely to be harmful.

CONCLUSION

Pantoprazole induced BHT is a benign condition and can be successfully managed by stopping the medication, good oral hygiene and hydration. Physicians should be aware of the possibility of BHT with the use of Pantoprazole especially when administered with antibiotics. Documentation and reporting of such cases should be encouraged in order to have a more evidence-based database on similar adverse drug reactions.

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