

# Terbinafine-induced taste impairment - report of two cases

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**Abstract** Terbinafine is an oral antimycotic agent that belongs to the allylamine class. It was introduced in 1991 and is being widely used, both topically and systemically, to treat fungal infections. Nowadays oral terbinafine has become a commonly prescribed drug to treat finger- and toenail fungal infections because of relatively short duration of treatment compared to other oral antifungals like griseofulvin and fluconazole. The common side effects of this drug include nausea, abdominal pain, elevated transaminases and allergic reactions. Loss of taste sensation is a rare side effect occurring in patient taking oral form of this drug. PubMed search showed that very few cases of terbinafine-induced taste loss have been reported worldwide. We report a case series of two patients who complained of taste loss after taking terbinafine.

**Key words**

Terbinafine, ageusia.

## Introduction

Terbinafine is a widely prescribed oral antifungal agent. Its mode of action is by inhibiting squalene epoxidase which converts squalene to lanosterol. With a decrease in lanosterol production, ergosterol production is also diminished, affecting fungal cell membrane synthesis and function. Also, inhibition of the enzyme causes buildup of precursors with significant fungicidal effects. The drug has been proven to be the choice treatment for onychomycosis because of its fungicidal property. Moreover, it is well tolerated and has a relatively low potential for drug interaction. Common side effects of terbinafine include headache, rash, allergic reactions, dyspepsia, elevated transaminases, abdominal pain, flatulence, urticaria and constipation. Ageusia is a rare side effect of

terbinafine that occurs in 0.6% to 2.8% of patients taking the drug. A low BMI, ageing and history of taste loss are considered risk factors for developing taste loss due to terbinafine.

## Case report 1

The patient was 61-year-old male who was referred to us from dental O.P.D. He attended dental clinic for correction of his denture. On enquiring about the history, he complained of loss of bitter and sour taste sensation for last one week. He also complained of nail infection for which he was taking medication from private doctor. He was asked to attend skin and ENT clinics. In ENT O.P.D, objective assessment of taste function showed partial loss of taste in both anterior and posterior part of tongue. There was complete loss of bitter and sour taste sensation and partial loss sweet and salty sensation. Evaluation of olfactory function was normal. Detailed neurological examination and magnetic resonance imaging of the brain did not show any abnormality. In skin O.P.D, when we enquired about his onychomycosis, he told us that he was taking

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oral terbinafine therapy for last 36 days. Since no other abnormality was detected for loss of taste sensation we asked him to stop the drug. He was called for review at 2 weeks interval. Follow-up evaluation of his taste function after one month showed improvement in his taste function. He could perceive sweet and salt sensation well, but his bitter and sour taste sensation showed only partial improvement. Evaluation of taste function after 2 months showed complete recovery of his taste function. Conceivably, this improvement in his taste function after stopping terbinafine indicated that his loss of taste sensation was caused by terbinafine.

### Case report 2

This patient was 47-year-old woman with 12-year history of dystrophic fingernails. She was housemaid by profession. On examination all the fingernails were involved except that of little finger of left hand. There was subungual hyperkeratosis and distal crumbling of the nail plate. Culture of the nail clipping was advised and it confirmed infection with *Trichophyton rubrum*. She was put on oral terbinafine 250 mg daily and followed at 2 weeks interval. On second follow-up examination, she complained of losing interest in eating food. On further enquiry she complained of needing more salt and sugar and didn't taste spicy food as earlier. Evaluation of taste sensation showed loss of bitter and sour sensation and partial loss of sweet and salty taste sensation. Neurological, gastrointestinal and ear, nose and throat evaluation did not show any abnormality. Suspecting terbinafine therapy as a cause of her taste loss, it was stopped immediately. She was asked to continue her follow-up visits at 2 week interval. On her first visit after stopping terbinafine, her taste sensation had recovered to some extent. After 4 weeks, her taste sensation had completely normalised. Evaluation of taste function showed normal results. Recovery of taste

sensation after stopping terbinafine confirmed that her loss of taste sensation was due to terbinafine.

### Discussion

Terbinafine is a synthetic antifungal of allylamine class. Following oral administration terbinafine is absorbed rapidly (>70%) and reaches the peak plasma concentration within 2 hours. The drug is highly lipophilic and keratophilic and is highly bound to plasma protein (>90%) with a bioavailability of 70% to 80%.<sup>1</sup>

Taste disorders are caused by conditions that interfere with the access of the tastant to the receptor cells in the taste buds (transport loss), injury receptor cells (sensory loss), or damage to gustatory afferents nerves and gustatory pathways (neural cells).<sup>2</sup> Common drugs implicated in causing taste loss include clopidogrel, interferon, doxorubicin and enalapril. Loss of taste sensation is a rare side effect of terbinafine that occurs in 0.6 to 2.8 percent of those taking this drug.<sup>3</sup> The mechanism of terbinafine-induced ageusia remains unclear. Presumably, it occurs at the level of taste receptors or within the afferent gustatory pathway. This is supported by the observation of relatively greater alteration in bitter and sour taste sensation than salty and sweet perception with terbinafine in various studies.<sup>4,5</sup> Electrophysiological study of chorda tympani nerve in non human primates shows that more sucrose-based and NaCl-based fibres are present than citric acid based and caffeine-based fibres.<sup>6</sup> This might be a possible explanation in humans also; as fewer fibres are dedicated for bitter taste signals, earlier and more will be the adverse effect of terbinafine on their function. In both the patients bitter sensation was lost initially and was last to recover. Risk factors for developing terbinafine induced taste loss include BMI less than 21 kg m<sup>-2</sup> and being over the age of 65

years.<sup>5</sup> Both the patients were over this age and had BMI of 22 and 19.

In both of patients, onset of adverse affect occurred 4-6 weeks after starting treatment. Stricker *et al.*<sup>5</sup> have reported mean latent period between first intake of terbinafine and taste loss to be 35 days. Other studies have also reported that taste loss commonly occurs after 4-6 weeks of drug use.<sup>7,8</sup> Taste loss gradually recovers after stopping terbinafine. Most reported cases had complete recovery of taste function within 4 months of stopping terbinafine. However, a persistent case of terbinafine-induced taste loss has been reported by Bong *et al.*<sup>8</sup> Temporal association of taste loss 4-6 weeks after starting terbinafine and recovery after stopping the drug proved terbinafine as cause of taste loss in both these patients.

### Conclusion

Though a rare side effect, but since terbinafine is increasingly being used to treat onychomycosis, physicians should be cautious in prescribing it for elderly persons as taste dysfunction may lead to depression and loss of appetite.

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