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CASE REPORT

Management of Acute Pseudomembranous Candidiasis in a Dysphagia Post-Stroke and Hairy Tongue Patient

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ABSTRACT

Background. Hairy tongue is a benign condition characterised by the elongation of the filiform papillae. This elongation creates an environment conducive to debris retention and alterations in the oral microflora, thereby increasing the risk of developing candidiasis. In patients with dysphagia, the decrease in mastication and swallowing movements further creates an opportunity for candidiasis to develop. **Case report**. This present case reports a 67-year-old man with dysphagia following a stroke incident. A thick white pseudomembrane was observed on the dorsum of the tongue and the edentulous ridge, which had otherwise appeared normal to the surrounding mucosa. Treatment consisted of prescribing an oral antiseptic to be used three times daily and regularly using a tongue scraper after brushing. After seven days of treatment, the pseudomembrane had disappeared, except for the central posterior part of the tongue. This remaining pseudomembrane could not be scraped off and was defined as a hairy tongue. **Conclusion**. Proper management of acute pseudomembranous candidiasis on the hairy tongue lesions can prevent candidemia and further tongue mucosal changes.

Key words: hairy tongue, dysphagia, stroke, candidiasis, nasogastric tube

INTRODUCTION

Hairy tongue (HT), also known as lingua villosa, is a benign condition that presents with a striking appearance.[1] It is characterised by a coating on the dorsum of the tongue, resulting from the elongation and hypertrophy of the filiform papillae.[1] The hair-like structures develop due to inadequate desquamation of keratin on the dorsal surface of the tongue.[2] Clinically, discolouration is observed on the dorsum of the tongue, particularly in the middle and posterior one-third.[3] The white type of oral hairy tongue is often misdiagnosed as acute pseudomembranous candidiasis. Still, this condition is prone to developing candidiasis because the elongation of the filiform papillae can lead to debris retention, creating a conducive environment for candidiasis.[4] In patients with dysphagia, the decreased ability to masticate and swallow further alters the regular microbiological composition, promoting changes in the oral microflora, particularly an overgrowth of Candida.[5]

The previous study reported many underlying mechanisms of hairy tongue, such as smoking, the use of several antibiotics and dysphagia.[6] However, dysphagia, which is a complication of acute stroke, is rarely discussed as an underlying mechanism for the occurrence of HT. Dysphagia is one of the various effects of acute stroke caused by neurological impairment. Dysphagia is a disorder of swallowing food involving the oral, oesophageal, and oropharyngeal areas.[8] The prevalence of dysphagia ranges from 50%-80% of patients with ischemic and hemorrhagic stroke survivors.

This condition causes the patient to lose the ability to intake food intraorally, thus causing various local conditions, including a disorder of desquamation of papilla on the dorsal of the tongue, consequently affecting systemic conditions such as malnutrition, dehydration, the potential to develop aspiration pneumonia and a decrease in the patient's quality of life.[9]

This case report highlights the clinical challenges in distinguishing between white oral hairy tongue and acute pseudomembranous candidiasis, particularly in a dysphagic patient following a stroke. It emphasises the importance of recognising the risk of candidiasis development in patients with hairy tongues, particularly when the condition is complicated by dysphagia, which can further alter the oral microflora and support the growth of *Candida sp*. This case highlights the importance of accurate diagnosis and prompt management to prevent the progression of candidiasis in such patients.

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CASE REPORT

A 67-year-old male presented at Nala Husada Dental Hospital with a thick, white patch on almost the entire dorsum of his tongue, which had been present for three months. He admitted to having halitosis and a burning sensation on his tongue. The patient had a 35-year history of smoking, with a consumption of more than 25 cigarettes per day. Six months prior, the patient had been hospitalised due to vertigo and decreased consciousness caused by a brainstem stroke. During his hospitalisation, he also developed dysphagia, diagnosed by a neurologist, which left him unable to drink or eat. As a result, a nasogastric tube (NGT) was installed to deliver food and medication directly to his stomach. He experienced a weight loss of 5 kg due to inadequate nutritional intake. His current medications include Atorvastatin 20 mg, Miniaspi 80 mg, Amlodipine 10 mg, and B Complex vitamins.

Intraoral examination revealed that the patient has an edentulous ridge in both the upper and lower jaws. The buccal mucosa appeared glossy, and the gingival architecture and the palate exhibited a shiny appearance (Figure 1A-D), suggesting xerostomia based on the Challacombe scale of 10. The ventral part of the tongue showed a dilatation of blood vessels (Figure 1E). The dorsum of the tongue was covered with a thick whitish pseudomembrane that extended over the entire surface of the tongue and was scrapeable (Figure 1F). A direct oral mycological smear examination of the pseudomembrane using KOH staining revealed the presence of pseudohyphae as fungal elements, leading to a preliminary diagnosis of pseudomembranous candidiasis.

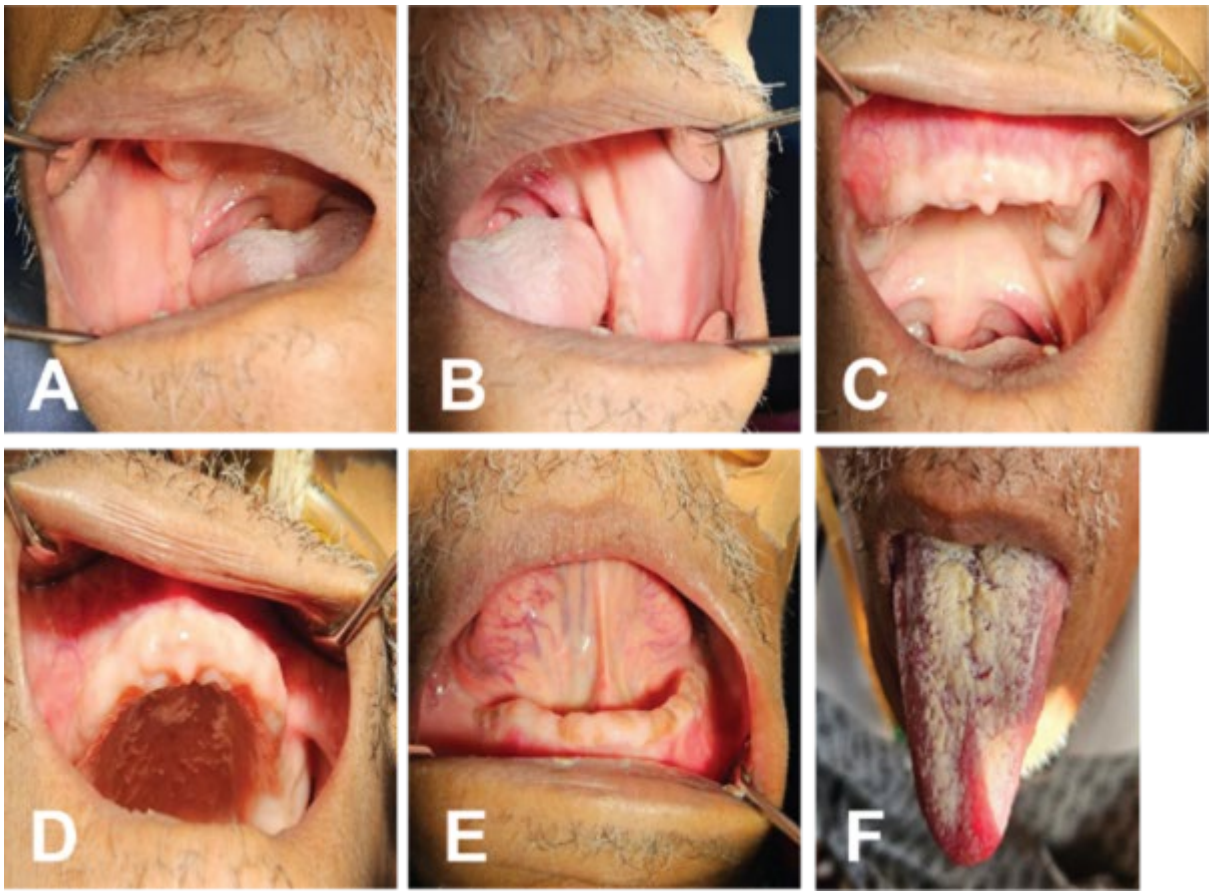

Figure 1. The intraoral examination of the patient. (A-B) Buccal mucosa appears as glossy mucosa; (C) The edentulous ridge and the gingiva looked shiny; (D) palate mucosa appear as pink as normal other oral mucosa; (E) dilated blood vessels on the ventral of the tongue and (F) thick yellowish white pseudomembrane in the dorsum of the tongue identified as food debris trap between the tongue papillae.

The treatment plan involved debridement of the tongue using normal saline, followed by the application of 0.12% Chlorhexidine digluconate. The patient was prescribed mouthwash to be used three times daily and was advised to use a tongue scraper regularly. The seven-day follow-up showed that the white pseudomembrane had significantly reduced, remaining only in the posterior-central area

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of the tongue. The patient had complied with the instructions for mouthwash and tongue scraping. A subsequent examination of the remaining pseudomembrane, which could be scraped off, showed no hyphae upon direct oral mycological smear examination, which indicated the resolution of candidiasis. However, an area of the white pseudomembrane that could not be scraped off was observed, which, upon closer examination, revealed elongation of the filiform papillae, confirming a diagnosis of the hairy tongue (Figure 2).

Figure 2. The white pseudomembranous on the posterior centre of the tongue after being treated with 0.12% Chlorhexidine digluconate. In the centre of the pseudomembrane, the lesion cannot be scrapped and is seen as elongated filiform papillae.

Item	**Scale**
Mirror stick to buccal mucosa	0
Mirror stick to tongue	0
Saliva frothy	0
No saliva pooling pooling in floor of mouth	0
Tongue shows generalised shortened papillae	0
Altered gingival architecture (smooth)	1
Glossy appearance of oral mucosa especially palate	1
Tongue lobulated/fissured	0
Cervical caries (more than two teeth)	0 (edentulous)
Debris on palate or sticking to teeth	0
Total	**2 (Mild dryness)**

Table 1. Challacombe Test Result

DISCUSSION

A hairy tongue is considered harmless because it is usually asymptomatic, but some patients complain of halitosis, tingling, and a burning sensation on the tongue.[11] Based on the previous study, hairy tongue can be induced by various factors, such as lifestyle habits (eg poor oral hygiene, a low fibre diet, smoking habit, tea, coffee, and alcohol consumption), local and systemic conditions (such as elderly dysphagia, trigeminal neuralgia, dry mouth, edentulous) and medication used (antibiotic or xerostomia agent).[11, 26]

In this case, we reported a hairy tongue in a dysphagia patient post-stroke with nasogastric tube installation for 6 months. The patient complained of discomfort and a rough tongue, accompanied by a burning sensation and halitosis. The patient had a 35-year history of smoking, which was discontinued after the patient experienced a stroke. Patients with dysphagia can improve swallowing function as early as 7 days post-stroke, while 11%- 13% continue to experience dysphagia for more than 6 months.[13] A nasogastric tube (NGT) is inserted through the nose to the stomach as an alternative pathway to deliver enteral nutrition.[14] NGT was temporarily used to maintain adequate nutrition support for patients with swallowing disorders until swallowing function improved. Patients with dysphagia would return to oral feeding after receiving swallowing therapy.[14]

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Long-term NGT insertion is associated with poor oral hygiene, including an increased incidence of hairy tongues.[15] Hairy tongue triggered by decreased physiological desquamation due to malfunctional tongue. This condition subsequently causes accumulation of the keratin layer due to the elongation of filiform papillae up to 3 mm, while the normal length is usually 1 mm long.[11]

Also, a long hairy form on the dorsum of the tongue can induce an imbalance of the oral microbiome, accumulation of debris, and hyposalivation due to the patient's history of smoking, which can contribute to the development of secondary infection from organisms, including *Candida albicans* and other microorganisms, causing candidemia.[2,15,16] Post-stroke dysphagia patients often exhibit immunosuppression, which may result directly from stroke damage or indirectly due to malnutrition stemming from impaired deglutition. Immunosuppressed individuals can serve as accelerators for the morphological transition of Candida albicans from a commensal organism to a pathogenic state.[17]

Proper management of the hairy tongue can prevent the occurrence of oral candidiasis and aspiration pneumonia.[18] In this case, an oral mycological smear examination was performed due to a clinical white pseudomembranous appearance on the tongue accompanied by mild dryness (score two on the Challacombe test) (Table 1). This action also confirmed the presence of candida co-infection in the patient's oral cavity.

First-line therapy, in this case, involves gentle tongue brushing. Second-line therapy consists of topical medication that uses antiseptic chlorhexidine digluconate 0.12% and antifungal Nystatin 100,000 IU to prevent co-infection by microbes throughout the entire oral cavity, specifically on the tongue. Chlorhexidine digluconate 0.12% is a broad-spectrum antimicrobial that attacks gram-positive and gram-negative bacteria, yeast, fungi, and viruses by damaging the permeability of cell wall membranes and extracellular protein of bacteria, yeast, protozoa, algae and viruses.[19,20] Nystatin is a polyene antifungal agent that exerts its effect by attaching to sterol components, particularly ergosterol, within the fungal cell membrane, leading to increased membrane permeability and subsequent leakage of intracellular contents.[21]

CONCLUSION

Hairy tongue is a benign condition with a good prognosis. Appropriate management includes mechanical debridement, antiseptic topical treatment to improve oral hygiene, and antifungal treatment to prevent secondary infections, especially in patients with dysphagia who use a nasogastric tube post-stroke. This approach aims to avoid the worst complications, such as co-infection and oral candidiasis.

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INFORMED CONSENT

Informed consent was obtained before the preparation of the case report, and the authors endeavoured to ensure anonymity.

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