Black hairy tongue

A scanning electron microscopic study

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'BLACK HAIRY TONGUE' is the name applied to a condition in which the filiform papillae are so greatly elongated that they somewhat resemble hairs. This acquired benign condition develops on the dorsum of the tongue mainly in front of the circumvallate papillae. The causes vary, and have been attributed to various bacteria, fungi, antibiotics, mouth washes, and vitamin deficiency. The present tendency is to consider that an important rôle is played by the lowered pH of oral secretions in blocking the normal desquamation of epithelial cells covering the filiform papillae. An accumulation of keratin layers which become stained by food, tobacco or chromogenic micro-organisms, creates a medium favourable to mycosis development.

Case report

M.O., a 61-year-old male, whose job was delivering newspapers, was admitted to hospital with a diagnosis of 'Cancer tongue with secondaries in the neck'. The patient complained of pain in the oral cavity especially during deglutition and inability to move his tongue freely. He stated that his complaints started about one month ago and had increased gradually since then. On oral examination, a malignant ulcer was found on the left side on the edge of the tongue encroaching on the floor of the mouth. The ulcer and surrounding area were covered with whitish necrotic slough. A black hairy tongue was observed on the dorsum of the anterior two-thirds of the tongue (Fig. 1). No history of recent antibiotic administration was given by the patient. Tongue cultures revealed Candida albicans and Staphylococcus aureus. The patient was operated upon through a lateral pharyngotomy and a partial glossectomy, and a unilateral radical neck dissection was performed. During the operation, pieces were taken from the area of the black hairy tongue and from a normally appearing mucosa at the edge of the tongue and were processed for scanning electron microscopic examination. In the post-operative period, the patient received Lilacillin ® (Sulfobenzyl penicillin) injections, 4 gm. daily, Vitamin C and Vitamin B complex. Eight days after the operation, the black hairy tongue disappeared and the mucosa of the tongue appeared thin and glazed.

Method

Immediate fixation of the tongue specimens was done in 2% glutaraldehyde buffered at pH 7·4 for two hours. Post fixation was made in 2% osmium tetroxide solution for 2 hours. The tissues were dehydrated in ascending grades of alcohol, then placed in isoamyl acetate for 30 minutes. The critical-point drying

https://doi.org/10.1017/S0022215100083407 Published online by Cambridge University Press

method using carbon dioxide was applied. Some of the specimens were broken by the freeze-cracking method to observe deeper structures. After double coating of the specimens with carbon and gold, the scanning electron microscope JSM-U3 was used for examination.

Findings

A- At the normally appearing part of the tongue:

The intercellular borders of the tongue's epithelial cells were distinctly outlined, and regular non-elevated surface folds or microplications were seen (Fig. 2). The filiform papillae were few in number, slender and short. The surface of the papillae was smooth, with fine folds.

B- At the area of the black hairy tongue:

The 'hairs' were long with irregular surface (Fig. 3). They consisted of many keratin layers arranged in a fish scale pattern (Fig. 4). The lower-most keratin layers were nearer to each other. In between the keratin layers. Many colonies of fungi, bacteria and debris were found (Fig. 5). In the cracked surface of the hairs, fungi were found deep in between the keratin layers (Fig. 6). The surface

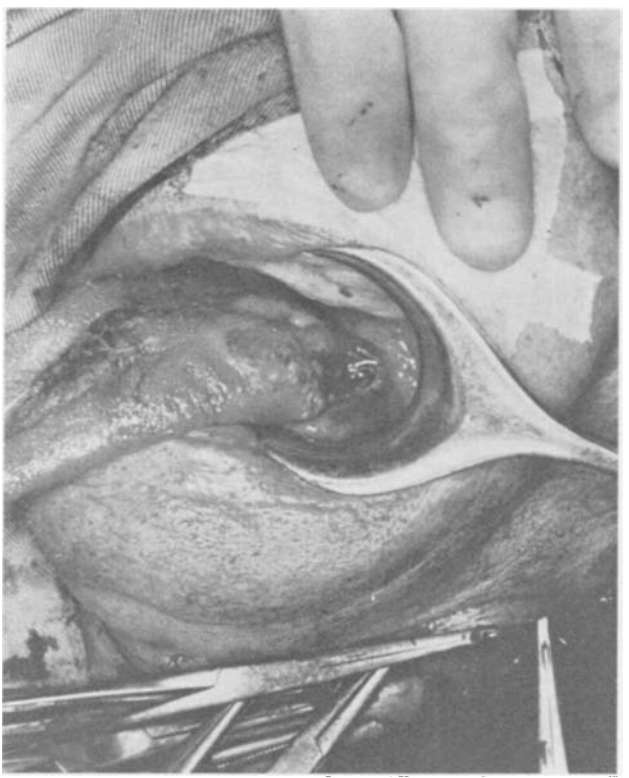


FIG. 1.
The black hairy tongue and the malignant ulcer during the operation.

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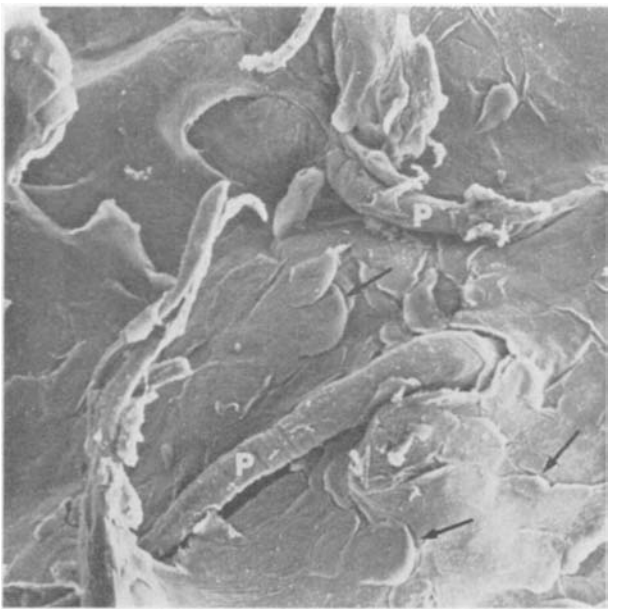


FIG. 2.

The normal part of the tongue, showing non-elevated surface folds (arrows). The filiform papillae (P) have smooth surfaces (×240).

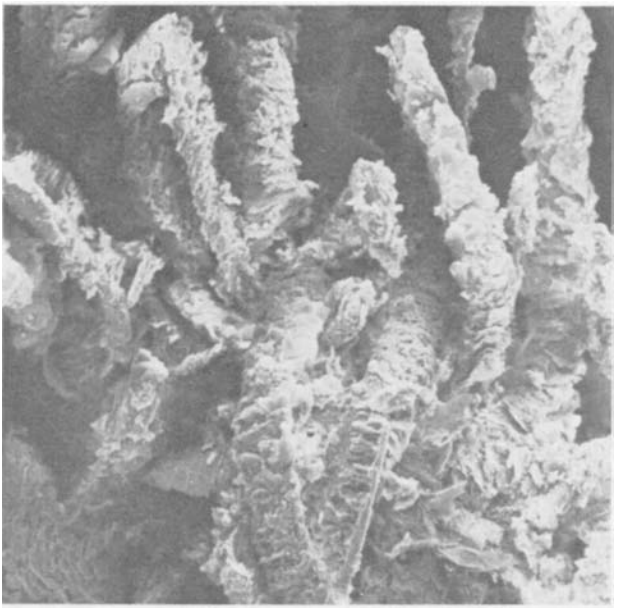


FIG. 3.

The 'hairs' consisted of elongated filiform papillae with rough surfaces (×80).

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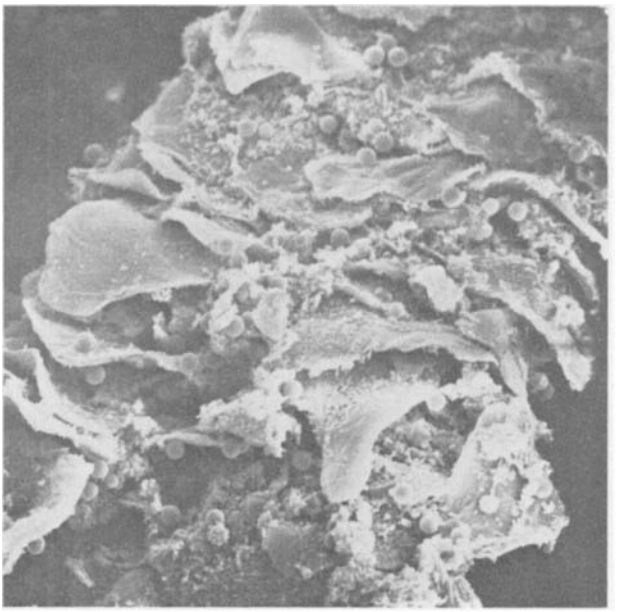


FIG. 4.
The arrangement of the keratinized layers (×480).

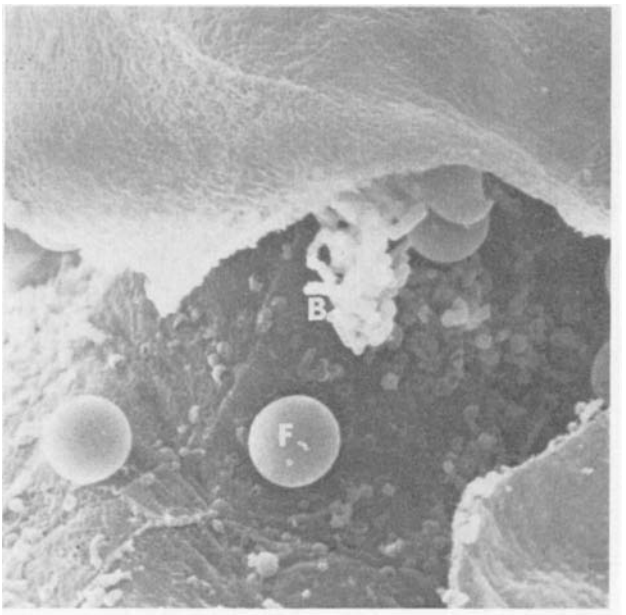


FIG. 5.
Fungus cells (F) and bacterial colonies (B) in-between the keratin layers (×2400).

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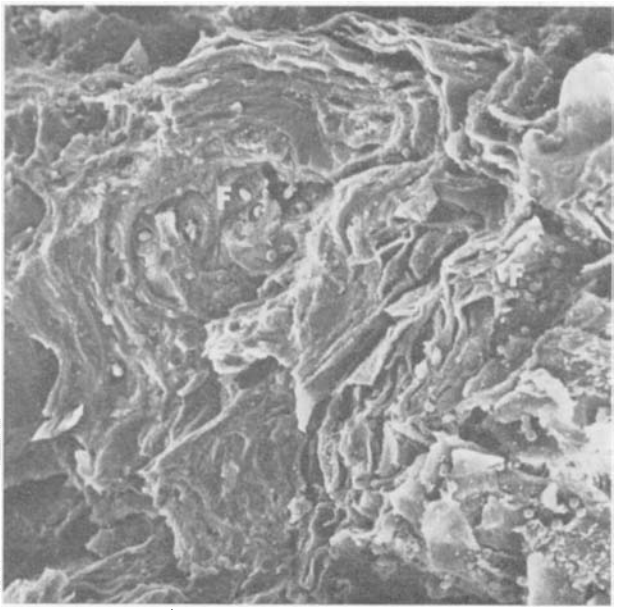


FIG. 6.
The cracked surface of the hair, showing fungi (F) deep in-between the keratin layers (×240).

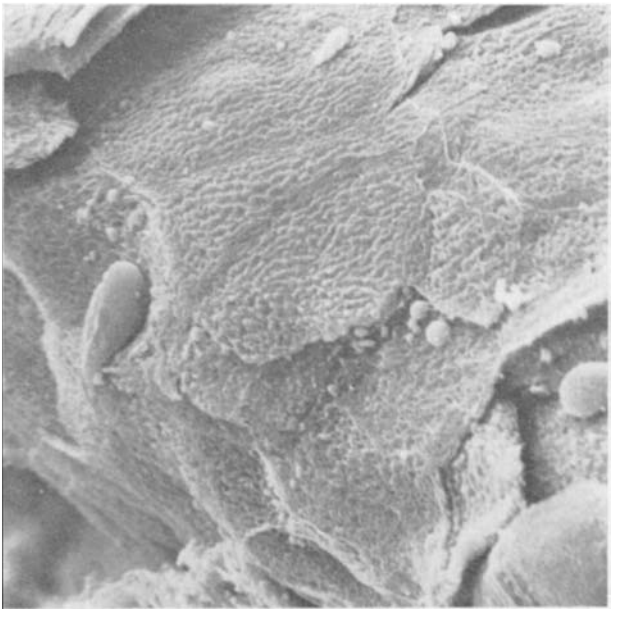


FIG. 7.
The surface of the tongue between the hairs, showing a rough surface and apparent desquamation (×1600).

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of the tongue between the hairs had a rough appearance with apparent desquamation harbouring some fungi (Fig. 7).

Comment

Our findings confirmed that the apparent lengthening of the filiform papillae was due to the accumulated keratinized layers. Between these layers, numerous fungi and bacteria were observed. The fungi were present both on the surface of the hairs and deep in between its keratin layers.

In our case, the association of the black hairy tongue with oral malignancy is worthy of record, as this was not found in the large series of Lineback in 1959 studying 127 cases of black hairy tongue. The absence of pre-operative recent antibiotic administration in our patient, and the disappearance of the black hairy tongue eight days after the operation could indicate that the chronic infection and the bad oral hygeine due to malignancy had produced the condition.

Summary

A patient with tongue malignancy associated with a black hairy tongue is presented. Specimens from the area of the black hairy tongue and from a normally appearing part were studied with the scanning electron microscope. The 'hairs' consisted of elongated filiform papillae due to accumulated keratinized layers. In-between these layers, fungi and bacteria were found. The aetiology of the black hairy tongue in this patient is discussed.

REFERENCE

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https://doi.org/10.1017/S0022215100083407 Published online by Cambridge University Press