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Inverted Follicular Keratosis in the Post-Auricular Region: A Case Report

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ABSTRACT

Inverted follicular keratosis is a rare, benign skin growth that can be difficult to diagnose under a microscope because it can resemble other benign and even malignant lesions. This case report describes a 53-year-old woman who had a small nodule behind her ear. The nodule was surgically removed and examined under a microscope. The microscopic features, such as the inward growth pattern of the cells and the presence of swirling structures called squamous eddies, led to the diagnosis of inverted follicular keratosis. This case highlights the importance of recognizing inverted follicular keratosis so that it can be distinguished from more serious skin conditions, particularly squamous cell carcinoma.

KEYWORDS: Inverted growth pattern, squamous cells, basaloid cells and squamous eddies

INTRODUCTION

Inverted follicular keratosis (IFK) is a rare, benign tumour of the skin that typically presents as a single lesion in adults. It most commonly affects individuals in their fifties. [1] A study by Asadi-Amoli et al. reported only 31 cases identified over 11 years, with an average patient age of 53 years (range 37-78). [2] IFK affects both males and females equally and usually appear on the face, particularly the eyelids. [3] Other common locations include the cheeks and upper lip. [1]

Microscopically, IFK has two key features: an inverted growth pattern and the presence of squamous eddies. The ”inverted” growth refers to the inward extension of the lesion into the dermis, regardless of whether the overall appearance is outward (exophytic) or inward (endophytic). Hyperkeratosis, which can be orthokeratotic, parakeratotic, or a combination of both, is also frequently observed. [1]

Case Description

A 53-year-old woman presented with a solitary nodular lesion behind her ear (post-auricular region). A biopsy specimen measuring 1 x 0.5 x 0.5 cm was obtained and processed using standard protocols. Hematoxylin and eosin staining revealed a lobular lesion with an inverted epithelial layer forming a central crypt-like space filled with keratin material (Figure 1). The lesion was primarily composed of squamous and basaloid cells (Figure 2). Deeper areas displayed the characteristic squamous eddies (Figure 3). Hair follicles were also identified within the lesion. The demarcation between the lesion and surrounding tissue was blunt, but the borders lacked infiltrative features. Based on these clinical and histopathological findings, the diagnosis of inverted follicular keratosis was established.

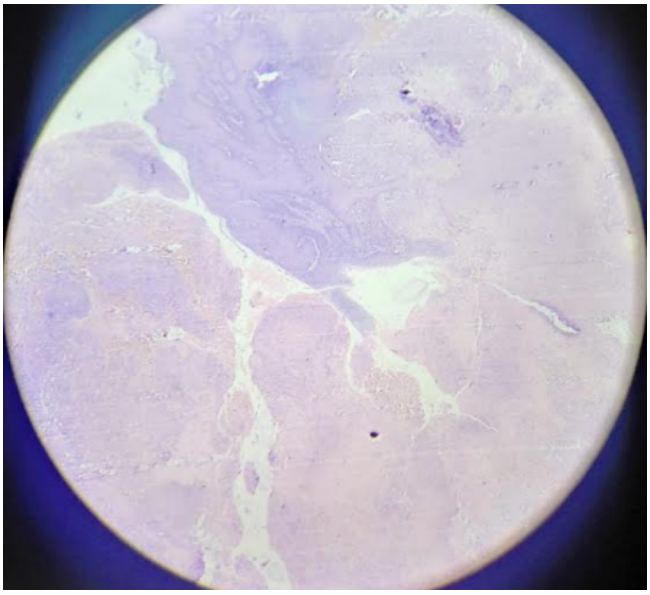

Figure 1: Inverted growth pattern forming crypt which is filled with Keratin material (H&E4X)

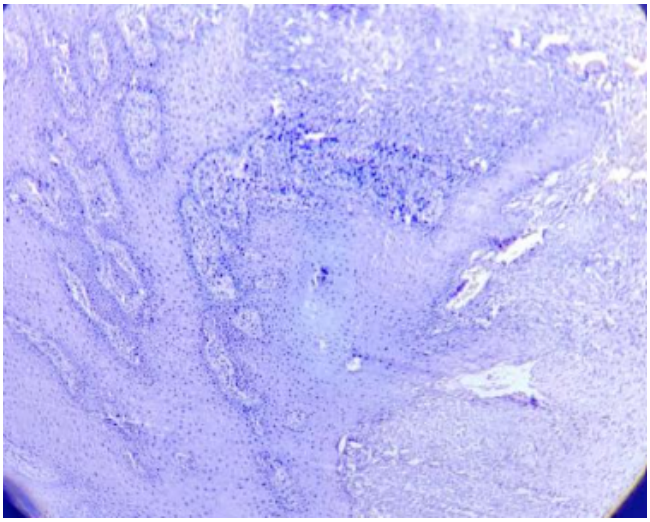

Figure 2: Squamous cellelement and basaloid cells within the lesion (H&E,10X).

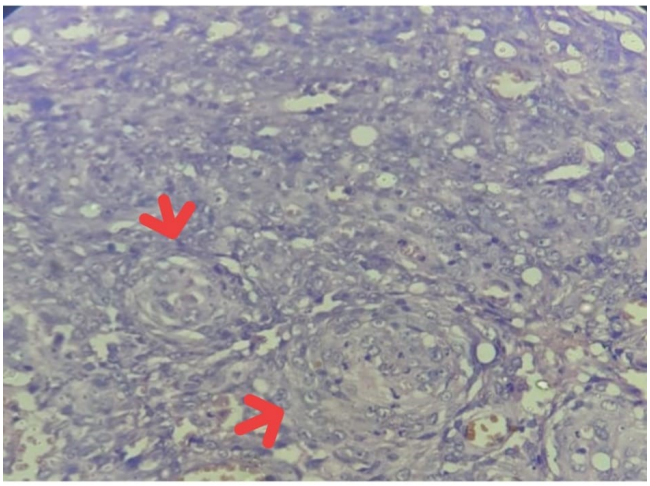

Figure 3: Squamous eddies (red arrow mark) within the lesion (H & E,40X).

DISCUSSION

This case presented with a post-auricular location and exhibited the characteristic microscopic features of IFK, including an inverted growth pattern forming a lobular dermal lesion composed of squamous and basaloid cells, along with the presence of squamous eddies. Squamous eddies are structures composed of eosinophilic, flattened squamous cells arranged in a concentric, onion-peel fashion. Most cases of IFK harbour hair follicles beneath or within the lesion [4], which was also observed in this case.

The exact cause of IFK remains unknown. Potential associations with human papillomavirus (HPV) infection, seborrheic keratosis, viral warts, and Cowden syndrome have been described. [5] Studies investigating the role of HPV in this skin tumour have yielded conflicting results, with some studies suggesting a possible link and others failing to detect the virus. [2] Some consider IFK to be a unique keratotic lesion specific to the infundibular portion of the hair follicle, while others view it as an irritated form of seborrheic keratosis or a type of verruca vulgaris (common wart). [6, 7]

Histopathologically, four distinct growth patterns of IFK have been identified: papillomatous (wart-like), keratoacanthoma-like, solid nodular, and rarely, a cystic type. [2] In this case, the lesion presented as a lobular structure with a central keratin-filled crypt, closely resembling keratoacanthoma.

Microscopically, IFK can be mistaken for a variety of benign and malignant lesions. Accurate differentiation from conditions such as viral warts, seborrheic keratosis, basal cell carcinoma, and squamous cell carcinoma is crucial. [8]

Verruca vulgaris can be distinguished by the presence of vacuolated koilocytic cells, vertical columns of parakeratotic cells, and inward bending of elongated rete ridges at the periphery of the lesion. Seborrheic keratosis has a predominantly outward growth pattern (exophytic), while IFK exhibits a downward growth component characterized by combined inward and outward (endo-exophytic) growth. [1] Some consider IFK to be a rare variant of seborrheic keratosis, while others classify it as a distinct entity.

Basal cell carcinoma can be excluded by the absence of peripheral palisading (a specific arrangement of basal cells), artifactual clefts, and the presence of squamous eddies in IFK. Squamous cell carcinoma also presents a diagnostic challenge due to the potential misinterpretation of the inward growth pattern of IFK as invasion and squamous eddies as squamous pearls. However, squamous cell carcinoma exhibits infiltrative margins, nuclear and cytological pleomorphism (variation in cell shape and size), hyperchromasia (darkly stained nuclei), atypical mitotic figures (abnormal cell division), and lacks the characteristic whorls of keratinocytes (squamous eddies) seen in IFK. Additionally, squamous eddies do not contain central parakeratosis, a feature present in keratin pearls.

Our case presented as a lobular lesion, and the central crypt is filled with keratin material, closely resembling Keratoacanthoma. In favour of a diagnosis of keratoacanthoma is the architecture of a crater surrounded by buttresses and the high degree of keratinization, which is manifested by the eosinophilic glassy appearance of many of the cells. [9]

A rare association with Cowden syndrome has been observed, where patients presented with multiple acral keratosis and inverted follicular keratosis. [10]

CONCLUSION:

Inverted follicular keratosis is a rare benign lesion characterized by an inverted growth pattern and squamous eddies. Awareness of this entity is important to differentiate it from various benign and malignant lesions, especially squamous cell carcinoma. Our case closely mimics keratoacanthoma,

so keratoacanthoma is also one of the important differential diagnoses for inverted follicular keratosis. As this lesion is rare and clinically mimics many other lesions, diagnosis of this entity by dermatologists is very rare. It should be diagnosed mainly by histopathological examination. Therefore, pathologists must be aware of this lesion.

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