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Case Report

Dermatology Section

Cutaneous Horn Arising from an Inverted Follicular Keratosis: A Rare Case Report

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ABSTRACT

In the present case report, a 61-year-old male presented with a slowly progressing conical keratotic growth measuring 2.5 cm over the right ear. The lesion, which was non-tender on palpation, resembled a cutaneous horn or cornu cutaneum-an outgrowth made of compact keratin that rises above the skin's surface. Since the clinical appearance of this uncommon benign tumour, known as Inverted Follicular Keratosis (IFK), is difficult to distinguish from other conditions, histopathology is the only method that can establish the diagnosis. No abnormalities were detected during general and systemic examination. The lesion was excised, and histopathological examination confirmed it as a case of IFK.

Keywords: Cornu cutaneum, Endophytic growth, Follicular infundibulum, Tumour

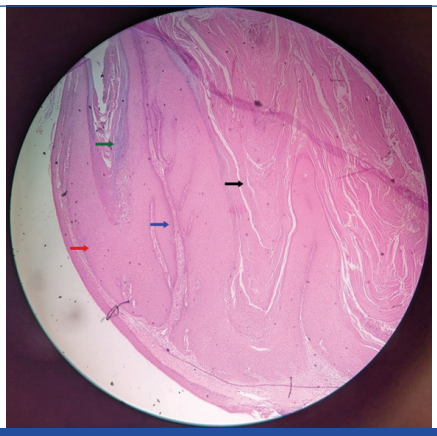
CASE REPORT

A 61-year-old male reported to the dermatology outpatient department with a complaint of a slowly yet progressively increasing yellow-brown conical keratotic growth over the helix of his right ear for the past six months. The lesion was asymptomatic, and the patient sought treatment for cosmetic purposes. There was no history of similar complaints in the past, and no lymphadenopathy or weight loss was recorded. The patient had a family history that was deemed irrelevant. He was being treated for systemic hypertension for the past three months. He worked as a security personnel and had significant exposure to sunlight during his working hours.

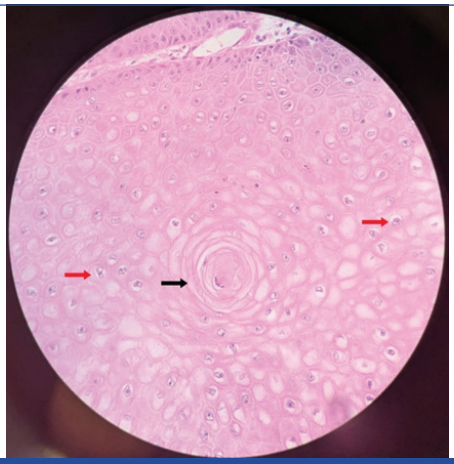
General and systemic examination did not reveal any significant abnormalities. On cutaneous examination, a firm yellow-brown conical mass, protruding 2.5 cm from the skin surface, was observed over the helix of the right ear [Table/Fig-1]. The lesion was non-tender, and no regional lymphadenopathy or inflammation was present. Clinical differentials included keratoacanthoma, Bowen's disease, and verruca. The lesion was completely excised and sent for histopathological examination to aid in diagnosis.

[Table/Fig-1]: Clinical image showing a cutaneous horn arising over an Inverted Follicular Keratosis (IFK).

The histopathological examination revealed an exo-endophytic proliferative growth arising in the epidermis, with extensions into the dermis. There was massive acanthosis, hyperkeratosis, and parakeratosis, with basaloid cells arranged in the periphery [Table/Fig-2]. The dermis showed a dense inflammatory infiltrate. High-power magnification revealed the presence of squamous eddies in the epidermis, along with dyskeratotic cells and mitotic figures at the base of the epidermis. However, there was no evidence of infiltration into the dermis, ruling out malignancy [Table/Fig-3]. The diagnosis of IFK (inverted follicular keratosis) was made based on these findings. Since the lesion was completely excised, no further treatment was required, and the patient was lost to follow-up.



[Table/Fig-2]: Scanner view (4x magnification) showing an exo-endophytic proliferative growth arising in the epidermis throwing extensions into the dermis; with massive acanthosis (red arrow), hyperkeratosis (black arrow), parakeratosis (green arrow) and basaloid cells at the periphery (blue arrow) (Haematoxylin and Eosin staining).



[Table/Fig-3]: High power view (40x magnification) of a haematoxylin and eosin-stained section of the skin focusing a squamous eddy (black arrow) with dyskeratotic cells in the periphery (red arrows).

DISCUSSION

A rare exo-endophytic growth known as IFK, which develops from the follicular infundibulum, was initially described by Helwig in 1954 [1,2]. The term "cutaneous horn" refers to a rigid, keratotic mass that is conical in shape, white to yellow in colour, and has a height atleast half the largest diameter of the base. While the horn itself is composed of dead keratin, the underlying condition can be benign, premalignant, or malignant [3].

IFK typically presents as an asymptomatic, firm, solitary, white-pink papule with a diameter smaller than 1 cm. In 90% of cases, IFK is localised to the head and neck region and is commonly observed in elderly men [1]. A cutaneous horn, which is a mass of compact keratin, may be present over a cutaneous lesion that can be benign (such as trichilemmoma, seborrheic keratosis, IFK, warts, and molluscum contagiosum), premalignant (such as arsenical keratosis, Bowen's disease, and solar keratosis), or malignant (such as Squamous Cell Carcinoma (SCC), melanoma, basal cell carcinoma, etc.) [3]. The development of a cutaneous horn is the result of persistent irritation at the base of the lesion, leading to reactive hyperkeratosis and the accumulation of cohesive keratin over it [3].

The exact aetiopathogenesis of IFK remains unknown. It has been associated with viral warts, seborrheic keratosis, human papillomavirus infection, and Cowden syndrome [4]. SCC, Verruca vulgaris, irritated seborrheic keratosis, and basal cell carcinoma are among the differential diagnosis of IFK [5].

Histological examination typically reveals a predominantly endophytic tumour with large lobules extending into the dermis. The tumour is composed of basaloid cells at the periphery and squamous keratinising cells toward the center, often displaying squamous eddies. Hyperkeratosis, parakeratosis, and occasional keratinous plugs are observed overlying the tumour [6].

While dermoscopy was not performed in the current case due to the conical projection of the overlying cutaneous horn, reports by Ray A et al., Hocker S et al., and Armengot-Carbo M et al., documented findings such as milky red patches, hairpin blood vessels surrounded by a whitish halo, white lines, red dots (blood spots), and yellow-white structureless amorphous areas surrounding keratinous plugs [4-6]. Another non invasive technique, Reflectance Confocal Microscopy (RCM), can also be utilised to arrive at a diagnosis, and reports by Hocker S et al., and Armengot-Carbo M et al., have previously described the characteristics of IFK, including looped vessels in the dermis, enlarged honeycomb patterns, disorganised dermo-epidermal junctions, and epidermal projections [5,6].

Complete surgical excision is the most popular treatment for IFK, with no documentation of invasive growth or metastases following surgical excision [1]. So far, topical 5% imiquimod cream has been infrequently used to treat this condition [4].

While there have been a few reports of inverted follicular keratoses in the literature, to the best of our knowledge, there has been only one other case report by Nahata VL documenting the occurrence of a cutaneous horn over a lesion of IFK [3]. [Table/Fig-4] documents the various clinical presentations, histopathological features, dermoscopic findings, reflectance confocal microscopic findings, as well as the treatment options available for this under-reported entity.

Parameters	Present case	Karadag AS et al., [1]	Mohamed M [2]	Nahata VL [3]	Ray A et al., [4]	Hocker S et al., [5]	Armengot-Carbo M et al., [6]
Clinical presentation	Slowly yet progressively, increasing yellow-brown conical keratotic growth over the helix of right ear	Sharply demarcated verrucous plaque on forehead	Keratotic lesion on the upper lip	Conical growth on nostril	Skin coloured verrucous plaque over left eyelid	Erythematous papule with verrucous surface on right forearm	Case 1- A 4-mm pink scaly papule on left temple Case 2- Erythematous papule on left chest Case 3- Asymptomatic erythematous keratotic papule on the nasal tip Case 4- An erythematous nodule on the left thigh
Histopathological examination	Growth arising in the epidermis throwing extensions into the dermis; with massive acanthosis, hyperkeratosis and parakeratosis and basaloid cells arranged in the periphery. Dermis showed a dense inflammatory infiltrate. Few squamous eddies were noted in the epidermis along with dyskeratotic cells and mitotic figures at the base of epidermis	Similar findings as in the present report	Similar findings as in the present report	Similar findings as in the present report	Similar findings as in the present report	Similar findings as in the present report	Similar findings as in the present report
Management	Excision in toto	Topical 5% imiquimod cream was advised, to be applied on three consecutive days in a week for about eight weeks	Excision in toto	Excision in toto	Topical 5% imiquimod cream was advised, to be applied on three consecutive days in a week for about six weeks	Excision in toto	Excision in toto
Dermoscopic findings	-	-	-	-	Milky red patches, hairpin blood vessels surrounded by whitish halo, white lines, red dots (blood spots), and yellow-white structureless amorphous areas surrounding keratinous plugs	Numerous ridges and fissures in a lobular configuration, with white lobules that had central coiled vessels or twisted loop vessels	In three cases, glomerular vessels were seen in the centre of a white-yellowish amorphous region that was encircled by radial peripheral hairpin vessels. These in turn were surrounded by a whitish halo. The fourth case also included a central white area that was amorphous, but the vessels were arborizing

Reflectance Confocal Microscopy (RCM)	-	-	-	-	-	The epidermis was arranged in lobules throughout. Upon closer inspection, the granular and spinous layers revealed an uneven honeycomb pattern with variations in the brightness, thickness, and size of the lines and holes. There was no parakeratosis or thick scale in the corneal layer. Dermal papillae were clearly defined with the occasional appearance of edged papillae and some bright spots (which are usually consistent with inflammatory cells)	In one case, epidermal projections, hairpin and glomerular arteries, and a widened honeycomb pattern were visible

[Table/Fig-4]: Table showing the different presentations of inverted follicular keratoses and modes of management as reported by various authors in literature.

CONCLUSION(S)

The IFK is an uncommon diagnosis confirmed through histopathology that may clinically mimic other dermatoses such as keratoacanthoma, Bowen's disease, seborrheic keratosis, or SCC. This case has been reported due to its relatively rare occurrence and to shed light on the fact that, although close differentials include cutaneous malignancies, this condition is benign and warrants only complete excision as management. Moreover, it is also essential that in a case of cutaneous horn, a skin biopsy is performed to differentiate between the benign and malignant aetiologies of the condition.

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