

Inverted Follicular Keratosis Scalp

Padam Kumari Agrawal, Swati Gupta, Rimi Pandey, Nivedita Yadav
Department of Pathology, Vivekananda Polyclinic & Institute of Medical Sciences, Lucknow, India

(Received: June, 2016)

(Accepted: July, 2016)

ABSTRACT

Inverted follicular keratosis (IFK) is a solitary benign epithelial tumor of infundibular hair follicle, generally observed in middle-aged and older individuals. An elderly male presented with a rough & raised pink colored lesion on the bald area of parietal scalp since 4 months. Fine needle aspiration (FNA) followed by histopathologic examination of the lesion was done. The FNA smears revealed features suggestive of intra-epidermal inclusion cyst while the final diagnosis of IFK was established on histopathological examination. The present article describes a correlation between the cytopathological features and histomorphology of IFK. The cytopathological features of IFK have not been described in the literature yet, hence this article provides a chance to study cytopathological features of this rare lesion.

KEY WORDS: cytology, histopathology, inverted follicular keratosis (IFK), keratosis scalp

INTRODUCTION:

The inverted follicular keratosis is a rare benign tumor of the skin appendages. It was first reported by Helwig (1955) and was named as Inverted follicular keratosis^[1] and also described its histopathological features. This benign tumor of the follicular infundibulum affects males twice as often as females. A common site of occurrence is face, especially the eyelids.^[2] Other, common areas include cheeks and upper lip^[3]. It may be mistaken for basal cell carcinoma or any other keratotic lesion. Typically these flesh-colored nodular or filiform lesions are between 0.3 to 1 cm in diameter. We describe the occurrence of this tumor on the scalp, which has not been reported so far. To the best of our knowledge, the cytopathological features of this rare lesion have been described for the first time by us.

CLINICAL HISTORY:

A 75-year-old male presented with a tiny, rough raised lesion on his scalp of four months

duration on dated 24th May, 2010. He made an attempt to scrape it with his nail but was unable to remove it. Instead the lesion steadily increased in size. It did not respond to antibiotic therapy. At his initial consultation at the clinic, a pink flesh colored dome shaped nodule was found on the parietal region of the scalp, which measured 1.5 cm in its maximum diameter. The surface featured an irregular papule like appearance [Figure1(inset) magnified view]. The surgeon referred the patient to the cytopathologist for fine needle aspiration cytology (FNAC). Thereafter the lesion was completely excised under local anesthesia. The specimen was sent for histopathological examination.

CASE REPORT:

Pathology examination:

On FNA, a tiny drop of thick creamy white material was obtained. Smears were prepared for cytological examination and stained by Papanicolaou and H:E stain. The smears were hyper-cellular comprising of thick sheets of enucleated hyper-keratinized squamous epithelial cells (Figure 2a). A few benign nucleated squamous epithelial cells and basaloid cells in tiny clumps were also seen (Figure 2b). No inflammatory reaction was present in any of the smears. Based on these cytological findings, it was

Corresponding Author:

Dr. Padam Kumari Agarwal
Agarwal Pathology Centre, A-15,
Nirala Nagar, Lucknow - 226020
(India)
Phone No.: +91 9452464858
E-mail: madamagarwal@gmail.com





Figure 1: Clinical photograph with inset: Pink colored dome shaped nodule scalp with irregular margin.

the basaloid cells along the periphery. Some of the cell nests presented central keratohyaline material.

The cell nests of large eosinophilic, polygonal squamous epithelial cells 'Squamous eddies' were frequently seen (Fig.3c&d). There was no atypia of squamous epithelial cells. Basal cell layer was intact along each lobule. No mitotic figures were seen. There was sparse infiltration by chronic inflammatory cells at places along the lobules. No melanin containing cells were present in the tumor area. Normal sebaceous glands were also seen. Hence a histopathological diagnosis of IFK was given.

DISCUSSION:

IFK is a benign, usually solitary epithelial

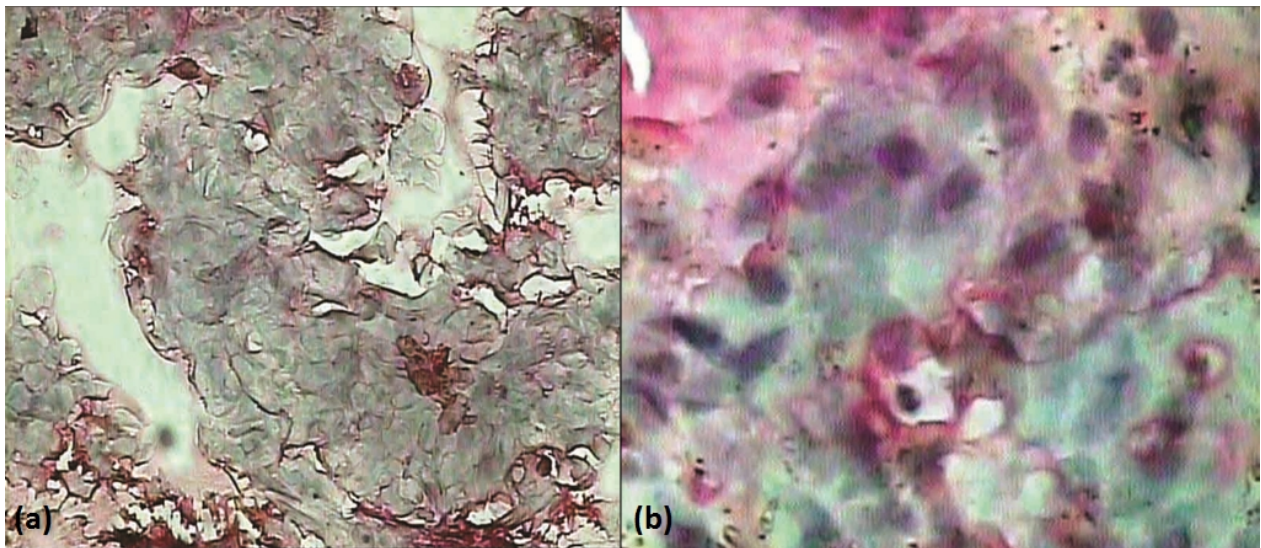


Figure 2: FNAC: (a) Smear showing irregular sheets of enucleated hyper-keratinized cells (Pap X 40) (b) Smear showing sheets of nucleated squamous epithelial cells and few basaloid cells (Pap X40).

The excised specimen was fixed in 10% neutral formal saline for paraffin sections which were stained by conventional H:E technique. Microscopic examination of the serial sections revealed that the biopsy piece was lined by intact epidermis. No evidence of papillary forms or exophytic growth on the surface of the lesion was seen (Figure 3a). There was an endophytic growth composed of proliferated squamous epithelial cells occupying the sub-epidermal zone. Multiple cell nests with parakeratotic and keratotic cells arranged in whorl like patterns, looking like cutaneous horn were present (Figure 3b). The cells were arranged in lobules which were lined by

tumor originating from the hair follicle and presents as a flesh-colored nodule or papule. This filiform lesion arises from the follicular infundibulum and may be up to 1 cm in diameter.^[3]

IFK most often involves the parts of body with long-term sun exposure, such as head, neck, cheeks, upper lip and nose^[1]. The upper eyelid being the most common site^[2]. The solitary lesion in present case was situated on the parietal region of bald scalp, hence relatively more exposed to sun. The authors could not find any previous reference related to the occurrence of this lesion on the scalp.

FNA smears were richly cellular and

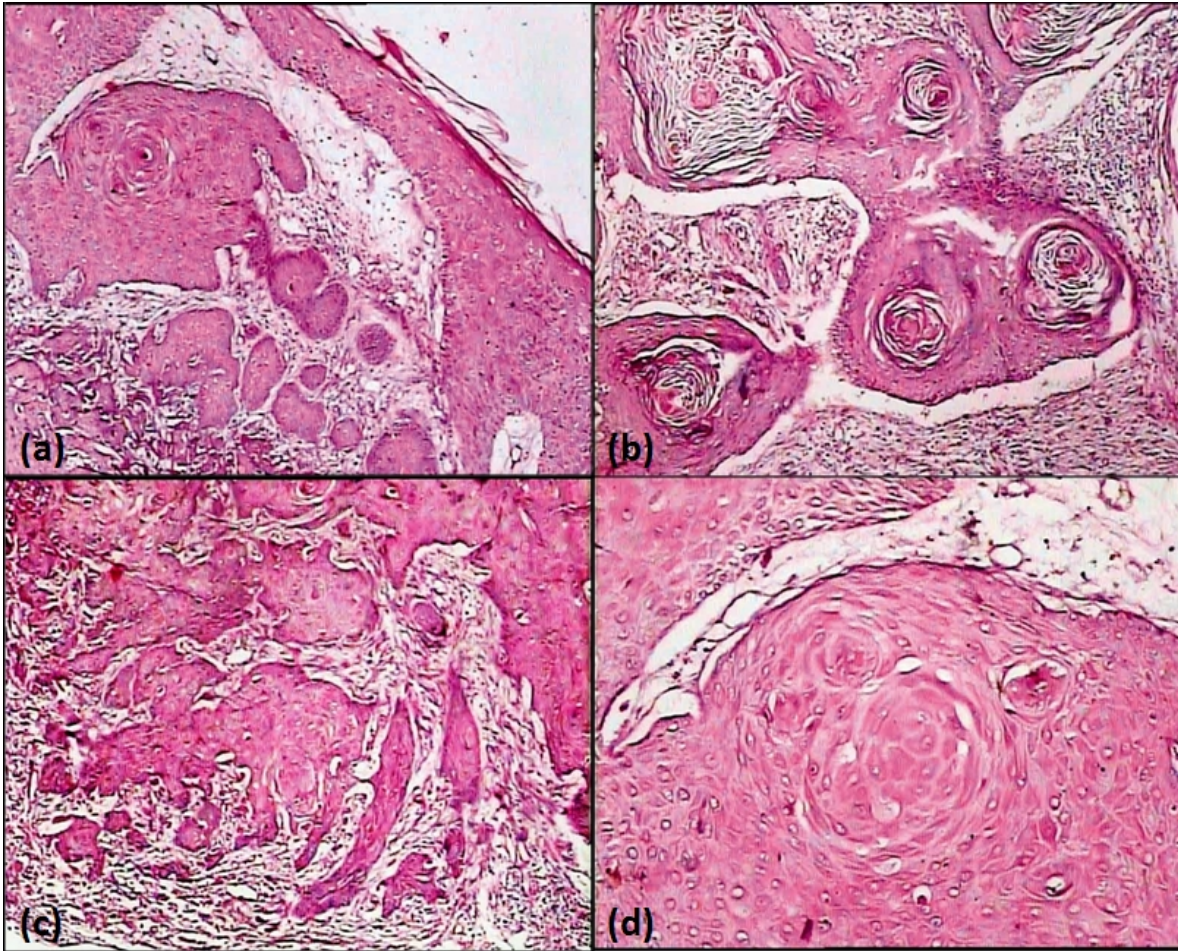


Figure 3: Histopathology :(a) Section showing endophytic growth composed of proliferated squamous epithelial cells arranged in lobules and parakeratotic and keratotic cells in whorl like patterns (H:E X 10). (b) Section showing tumor lobules and cell nests of large eosinophilic, polygonal squamous epithelial cells (horn cysts) (H:E X 10).(c) Section showing squamous cell eddies with keratohyaline material (H:E X40).(d) Squamous eddy in higher magnification (H:E X100).

contained sheets of mature keratinocytes and few basaloid cells. No inflammatory cells, necrotic debris or multinucleate giant cells were seen, as are being described in epidermal inclusion cysts. The number of basaloid cells was so scanty that possibility of trichoepithelioma could not be considered.

Histopathologically, four types of growth patterns have been identified: a papillomatous wart-like variant, a keratoacanthoma-like pattern, a solid nodular form, and rarely a cystic type.^[4] The present lesion revealed typically an endophytic tumor with lobules or papillary projections, lined by basaloid cells and were extending into the dermis. Squamous eddies were characteristic i.e. they consisted of concentric layers of squamous cells in a whorled pattern with overlying variable parakeratosis and hyperkeratosis^[5,6].

The numbers of keratotic horn cysts were comparatively more in the present lesion, probably because the lesion was situated on scalp. Hence the present case revealed a mixed pattern of tumor growth i.e. solid nodular type with keratoacanthoma like keratin horn cysts.

IFK is believed to be an inflammatory variant of seborrheic keratosis due to the presence of inflammatory reaction. However, this lesion was distinguished from seborrheic keratosis which usually contains horny invaginations, many of which are unrelated to hair follicles. Melanin pigmentation is often more prominent. But the most important distinction is the microanatomy: seborrheic keratosis is raised above the level of the surrounding skin, even when it is situated over a pressure point.^[2] By contrast; inverted follicular keratosis has usually dominantly

always presents as a downward growing component.^[4] IFK was distinguished from keratoacanthoma by absence of pale-staining squamous epithelium with overhanging edges. Instead, the presence of a lobular growth pattern with characteristic squamous eddies is hallmark of IFK.

The lesion also needs to be distinguished from squamous cell carcinoma.^[2] Squamous carcinoma was excluded because of absence of epithelial atypia on serial sectioning and also the lobules had blunt edges. The nuclear and cytological pleomorphism of squamous carcinoma was also lacking and there was no evidence of infiltration. The squamous eddies have a monotonous uniformity that distinguishes them from epithelial pearls. Abnormal mitoses were not found in the lesion, and hence the doubt of it being a malignant lesion was excluded. Exclusion of possibility of malignancy was essential considering the age of the patient and duration of lesion with history of steady growth. Postoperative period has been uneventful. There is no evidence of recurrence even after five years of follow-up.

CONCLUSION:

Inverted follicular keratosis (IFK) is a benign tumor of hair follicle, observed in the middle aged and elderly individuals. The tumor involves the sun exposed areas mainly the head and neck region, the most common site being face. The present case was an elderly bald male with a slow growing painless lesion on the parietal region of the scalp. Fine Needle Aspiration was performed, the lesion was suspected to be keratotic type but final diagnosis of Inverted follicular keratosis was confirmed on histopathological examination. After excision, patient was followed up for 5 years. No recurrence was noted.

REFERENCES:

1. Helwig EB. Inverted follicular keratosis. In: Proceedings of Seminar on the skin: neoplasms and dermatoses. 20th Seminar of the American Society of Clinical Pathologists, Washington, DC. *Ame J Clin Pathol* 1955;38-42
2. Boniuk M, Zimmerman LE. Eyelid tumors with reference to lesions confused with squamous cell carcinoma. II. Inverted follicular keratosis. *Arch Ophthalmol*. 1963;69(6):698-707.
3. Azzopardi JG, Laurini R. Inverted follicular keratosis. *J. Clin. Pathol*. 1975;28(6):465-471.
4. Asadi-Amoli F, Alain A, Heidari AB et al. Detection of Human Papillomavirus Infection in Inverted Follicular Keratosis Lesions of the Eyelid by Immunohistochemistry Method,scal. *Acta Medica Iranica*. 2009 ;47(6):435-437.
5. Weedon D. *Skin Pathology*. London: Churchill Livingstone. 2nd Edn.; 2002;:131.
6. Mehregan AH. Inverted follicular keratosis is a distinct follicular tumor. *Ame J Dermatopath* 1983;5(5):467-70.

Cite this article as: Agrawal PK, Gupta S, Pandey R, Yadav N: Inverted Follicular Keratosis Scalp. *PJSR*. 2016;9(2):65-68.

Source of Support: Nil, **Conflict of Interest:** None declared.