

## Actinic keratosis arising in an epidermal cyst

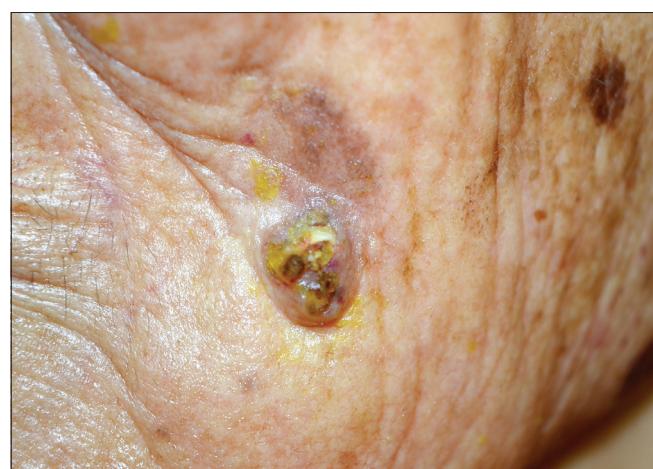
Sir,

Actinic keratosis is a common skin tumor which occurs on sites chronically exposed to sun, such as the face, scalp, neck and forearms. There is an increased incidence of actinic keratosis with age, lighter skin color and chronic sun exposure. Actinic keratosis evolves in stages from individual UV-damaged keratinocytes, subclinical nonvisible lesions, early and late lesions and if untreated, may evolve as an invasive squamous cell carcinoma. Histopathologically, there is keratinocyte pleomorphism and architectural changes as well as nuclear morphometric alterations at the basal and supra basal areas of the epidermis on a background of photodamage such as atrophy and solar elastosis in the dermis.<sup>[1]</sup>

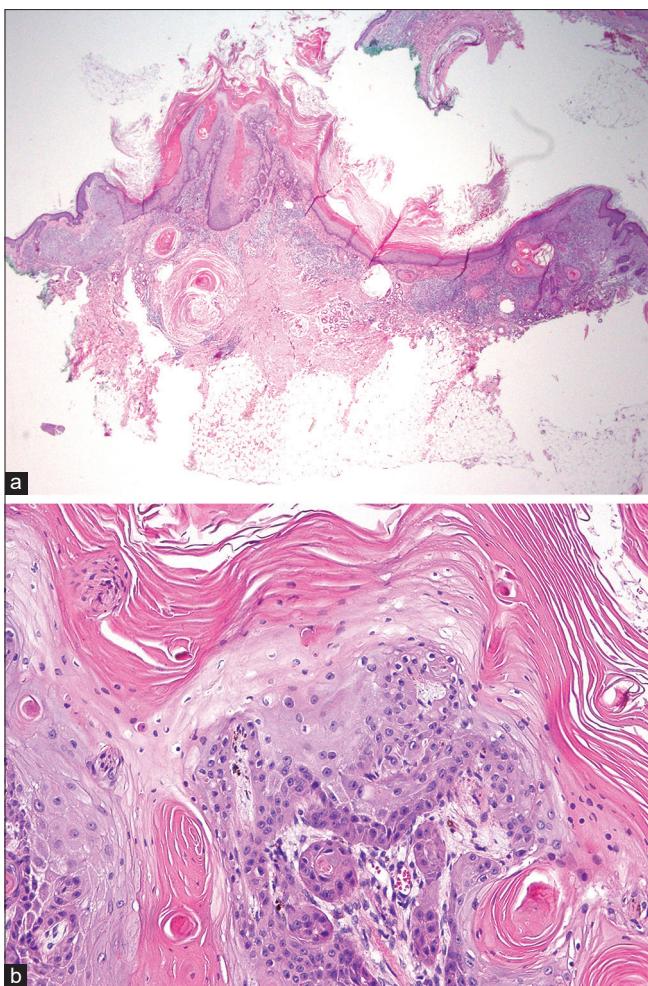
An epidermal cyst develops from the infundibular part of the hair follicle; therefore, it is also called as infundibular cyst or epidermal inclusion cyst. Herein, we report an unusual case of an epidermal cyst with focal change of actinic keratosis.

A 78-year old Taiwanese woman of Fitzpatrick 3 skin type, presented with an asymptomatic skin lesion on the left cheek which existed for many years and gradually increased in size. On examination, it was a nodular lesion about 1.5 cm in size with scaling and yellowish crusts [Figure 1]. The lesion was completely excised and the specimen was sectioned into four pieces. In one piece, there were typical findings of actinic keratosis that showed hyperkeratosis, parakeratosis, irregular acanthosis and proliferation of atypical keratinocytes in

the lower epidermis [Figure 2a and b]. The other sections demonstrated a dermal cystic lesion expanding to the subcutis, filled with keratinous material and mainly lined by stratified squamous epithelium with a granular layer which indicated a typical epidermal cyst [Figure 3a]. The cyst lining in the deep portion, close to subcutis, revealed areas of atypical proliferation of keratinocytes. These keratinocytes had abundant glassy cytoplasm, forming multiple short blunt extensions with nuclear atypia in the lower portion of cyst membrane as seen in actinic keratosis [Figure 3b-e]. The proliferating keratinocytes in the basal-suprabasal layers had a mild increase of proliferative index under



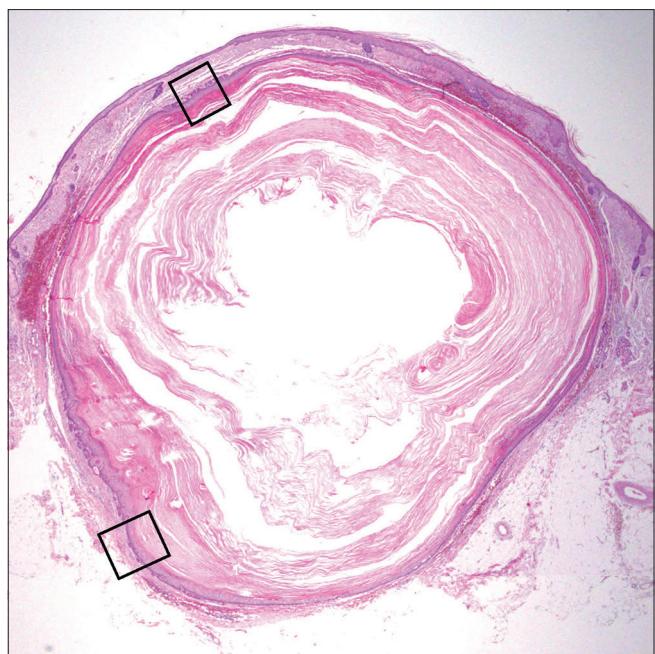
**Figure 1:** A nodular lesion measuring about 1.5 cm in size with scaling and yellowish crusts on the left cheek



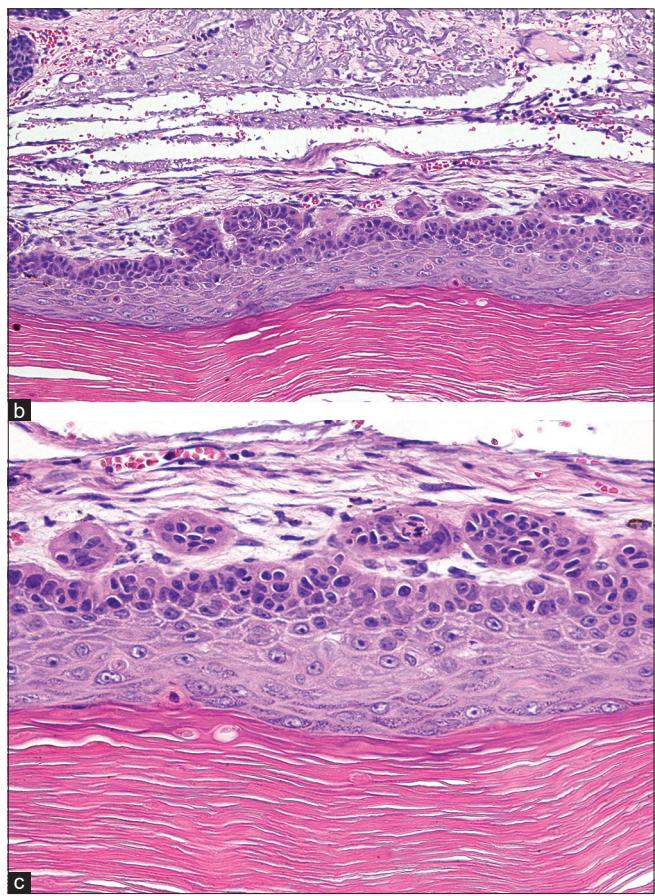
**Figure 2:** One section showed typical findings of actinic keratosis featured by hyperkeratosis, parakeratosis and irregularly proliferation of atypical keratinocytes in the lower epidermis (a) (H and E, 4 $\times$ ), (b) (H and E, 40 $\times$ )

immunohistochemistry stain for Ki-67 and some of them frankly stained with p16. The overall features suggested an actinic keratotic change of a portion of the epidermal cyst. The surgical margins were free of tumor involvement.

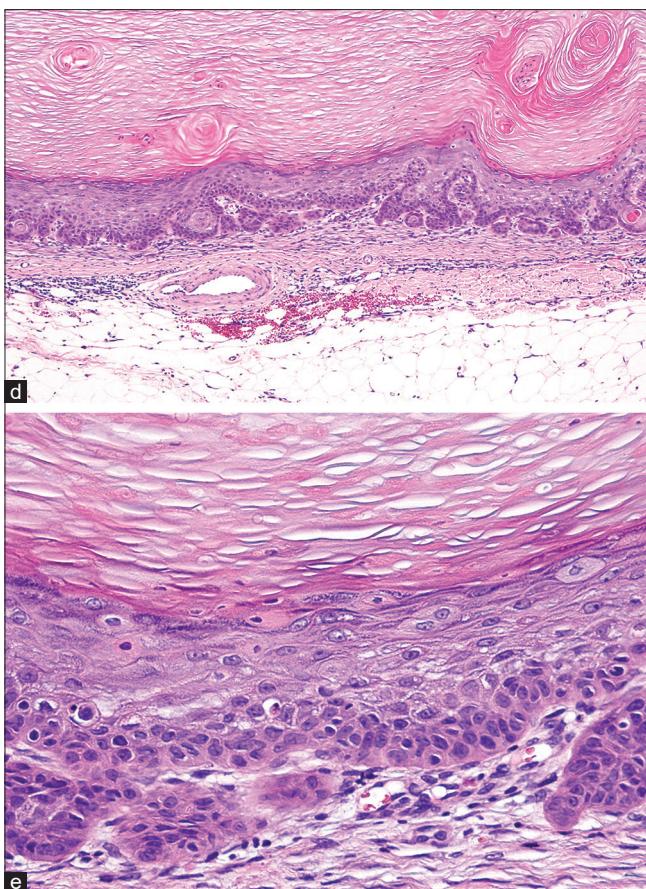
Epidermal cysts are very common lesions, but development of actinic keratosis on them is a very rare occurrence. Sometimes, actinic keratosis may show a downward extension into the hair follicle.<sup>[2]</sup> This finding was also present in our patient [Figure 2a]. Since there is a possibility of common origin from the infundibular portion of the hair follicle, we can establish a link between the epidermal cysts and malignant changes, like actinic keratosis, in this case. Based on available literature till date, cases of well documented squamous cell carcinoma arising from epidermal cysts have an incidence ranging from 0.01–0.05%.<sup>[3]</sup> The proposed mechanism of malignant change seen in epidermal cysts could be chronic inflammation due to direct trauma, recurrent irritation, human papillomavirus, immunosuppression and actinic damage.<sup>[4]</sup> In our case report, ultraviolet damage could



**Figure 3a:** The section of the underlying epidermal cyst. The changes of actinic keratoses are present in several areas (H and E, 4 $\times$ )



**Figure 3 (b, c):** The section of the underlying epidermal cyst. The changes of actinic keratoses are present in several areas, including the area underneath the solar elastosis (b) (H and E, 20 $\times$ ), (c) (H and E, 40 $\times$ )



**Figure 3 (d, e):** The section of the underlying epidermal cyst. The changes of actinic keratoses are present in several areas, including deep portion close to subcutis. There were areas of atypical proliferation of keratinocytes that had abundant and glassy cytoplasm, forming multiple short blunt extensions (d) (H and E, 20 $\times$ ), (e) (H and E, 40 $\times$ )

have been the precipitating factor as it was present on a chronically sun damaged skin.

Epidermal cysts presenting with pain, rapid growth or overlying skin changes such as ulceration or persistent drainage should be considered as warning signs and must be completely excised. There are possibilities of missing a malignant change because of simple bisection of the cyst and therefore, thorough sectioning is advised whenever in suspicion.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published, and due efforts will be made to conceal identity but anonymity cannot be guaranteed.

**Financial support and sponsorship**  
Nil.

#### Conflicts of interest

There are no conflicts of interest.

**Eswari Loganathan, Kuo-Ming Chang<sup>1</sup>, Yu-Hung Wu<sup>2</sup>**

Department of Dermatology, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India, <sup>1</sup>Department of Pathology, Mackay Memorial Hospital, Hsinchu Branch, Hsinchu, <sup>2</sup>Department of Dermatology, Mackay Memorial Hospital, Taipei, Taiwan

**Correspondence:** Prof. Yu-Hung Wu,  
Department of Dermatology, Mackay Memorial Hospital, 92, Sec. 2,  
Zhongshan North Road, Taipei 10449, Taiwan.  
E-mail: yuhung\_wu@yahoo.com

#### References

- Figueras Nart I, Cerio R, Dirschka T, Dréno B, Lear JT, Pellacani G, et al. Defining the actinic keratosis field: A literature review and discussion. *J Eur Acad Dermatol Venereol* 2018;32:544-63.
- Fernández-Figueras MT, Saenz-Sardà X, Vargas P, Thompson CT, Carrato C, Puig L, et al. The depth of follicular extension in actinic keratosis correlates with the depth of invasion in squamous cell carcinoma: Implication for clinical treatment. *J Eur Acad Dermatol Venereol* 2018;32:1657-61.
- Morgan MB, Stevens GL, Somach S, Tannenbaum M. Carcinoma arising in epidermoid cyst: A case series and aetiological investigation of human papillomavirus. *Br J Dermatol* 2001;145:505-6.
- Sze S, Richmond I, Bickers A, Saha A. Squamous cell carcinoma arising from a vulval epidermal cyst. *J Obstet Gynaecol Res* 2016;42:1623-6.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Quick Response Code:	Website: <a href="http://www.ijdvl.com">www.ijdvl.com</a>
	DOI: 10.4103/ijdvl.IJDVL_521_19

**How to cite this article:** Loganathan E, Chang KM, Wu YH. Actinic keratosis arising in an epidermal cyst. *Indian J Dermatol Venereol Leprol* 2020;86:411-3.

**Received:** September, 2019. **Accepted:** January, 2020.

© 2020 Indian Journal of Dermatology, Venereology, and Leprology | Published by Wolters Kluwer - Medknow