Case Report
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Keratoacanthoma: A Case Report, An Update, and Review of Literature

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Objectives This study aimed to review and briefly discuss the literature about keratoacanthoma (KA) and present a case of KA of the facial skin under the right eye with over 6-months of follow-up after removal.
Case: An 86-year-old healthy man was referred to a private clinic with a 5-6-week history of a rapidly growing, crateriform nodule with a central hemorrhagic crust on the facial skin under the right eye. Surgical excision was the treatment chosen to differentiate the lesion from squamous cell carcinoma (SCC). Thereafter, the lesion was completely excised. Histopathological analysis confirmed the diagnosis of KA. During over 6 months of follow-up after removal of the lesion, the patient was completely satisfied with the process of treatment, and no recurrence occurred.
Conclusion Solitary KA lesions are commonly found on sun-exposed skin in older adults, similar to our case. Early diagnosis and treatment could reduce the risk of malignancy and recurrence. Moreover, close follow-up of patients with a history of KA is needed, because the possibility of developing a new KA lesion, due to trauma or medical and cosmetic procedures, especially on the UV damaged skin, still exists.
Keywords Keratoacanthoma; Carcinoma; Squamous Cell; Skin

Introduction

Keratoacanthoma (KA) is a self-limiting benign epithelial growth on sun-exposed skin in elderly patients (men age over 40 years) with distinctive diagnostic clinical features and histological criteria. However, it has a strong clinical and histopathological similarity to cutaneous well-differentiated squamous cell carcinoma (SCC), originating from squamous epithelium cells surrounding the hair follicles.[1] In head and neck areas, KA is common and accounts for 70% of all KA lesions. Classically, this lesion is presented as a dome-shaped nodule with an ulcerated crater at its center.[2] Moreover, KA may infrequently occur on non-hair bearing areas such as oral mucosa, bulbar conjunctiva, nasal mucosa, and genitalia.[3, 4] The etiology of KA remains less known. The risk factors for its development include ultraviolet radiation (as the most common factor), chemical carcinogens, drug exposure, human papillomavirus, immunosuppression, radiation, and trauma.[3, 5] KAs are mostly treated with some aggressive modalities such as excision, cryosurgery, Mohs micrographic surgery, electrodesiccation, and curettage.[5, 6] This report presents a case of rapidly growing KA with a review of literature.

Case Report

An 86-year-old healthy man, because of his acquaintance with a maxillofacial surgeon, was referred to a private clinic in Tehran, Iran. He had a 5-6-week history of a rapidly growing crateriform nodule with central hemorrhagic crust on the facial skin under his right eye. Clinical examinations revealed another exophytic nodule, which was painless with a smooth surface, measuring 11 x 6 x 6 mm on the nasal skin (Figure 1).

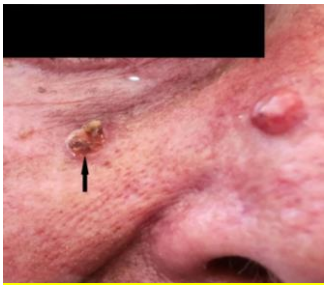

Figure 1- Presence of two lesions on the right side of patient's face. A well-defined, crateriform nodule with central hemorrhagic crust under the right eye (arrow). Another exophytic nodule can be seen on the nasal skin.

The patient had no history of trauma, infection, tumors or any prior radiation. The prolonged exposure to sunlight due to working outdoors was the main etiological factor of KA in this patient. In clinical examinations, no tenderness or lymphadenopathy was observed in the head and neck areas after palpation. The differential clinical diagnoses included nevus and SCC. Both lesions were completely excised under local anesthesia. Grossly, the lesion sizes were measured as 9 x 6 x 4 mm (under the eye) and 10 x 6 x 5 mm. The histopathological sections of the lesion under the eye showed an epithelial lesion composed of downward verruciform proliferation of mature hyper-orthokeratinized stratified squamous epithelium along with a central crater-like keratin plug as well as the marginal buttress of epithelium. The epithelial cells showed a few mitoses, mild atypia, individual cell keratinization, and keratin pearl formation. In our case, stromal invasion was not observed. In the underlying connective tissue, chronic inflammatory cell infiltration was also seen (Figures 2 and 3). Thereafter, the diagnosis of KA was made based on histopathological features. The histopathological sections of the lesion on the nose showed a nodular mass composed of benign proliferation of nevus cells in the form of sheets and theque

intermixed with fat cells in the loose to fibrous connective tissue. Moreover, epithelioid and neuroid cells, hair follicles, and sebaceous glands were evident. The lesion was observed to be covered by orthokeratinized stratified squamous epithelium (Figure 4).

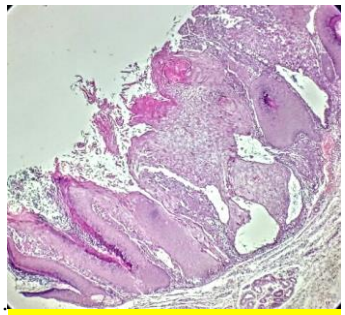

Figure 2- Histopathological section shows an exo-endophytic verruciform epithelial lesion with central crater-like keratin plug and marginal buttress of epithelium (×100 magnification, H&E)

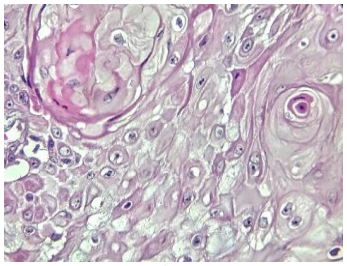

Figure 3- Epithelial cells show a few mitoses, mild atypia, individual cell keratinization and keratin pearl formation (×400 magnification, H&E)

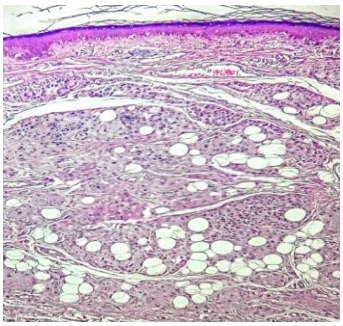

Figure 4- Microscopic feature of dermal mature nevus. Benign proliferation of nevus cells in the forms of sheets and theque intermixed with fat cells in the loose to fibrous connective tissue (×40 magnification, H&E).

The pathological diagnosis of this lesion was dermal mature nevus. The patient was closely followed up for more than 6 months clinically following the initial presentation, and no recurrence of the lesion was seen.

Informed consent was obtained from the patient for the surgical procedure as well as the information required to report the case.

Discussion

New version of the World Health Organization classification of skin tumors has classified KA as a likely variant of a well-differentiated cutaneous SCC, due to observing indistinguishable histological features from cutaneous SCC. [7] Since the biology of KA is still unclear, there is a misunderstanding on this subject among dermatologists worldwide.[8] In the head and neck areas, the most important features of these tumors are fast growth with a spontaneous regression as a dome-shaped nodule with an ulcerated crater at the center. [4, 9] These findings were also seen in our case, except the spontaneous regression. The etiology of KA has not yet been well understood; thus, ultraviolet radiation, as the most common factor, has been suggested. Accordingly, this is because the most solitary lesions on the skin under the sunlight occur in older adults. Moreover, 70% of KAs are seen in the head and neck regions[2, 10], similar to the case reported here. The classic histological feature of KA is characterized by its exo-endophytic, well-defined, and symmetrical architecture, central keratin plugs, overhanging epithelial lips covered with normal epidermis, and minimally infiltrative borders. Accordingly, it consists of lobules of mature squamous epithelial cells[11, 12] these histopathological features were also observed in our case. Distinguishing between KA and SCC is a challenge because these two have some similarities in their clinical and morphological features. In KA, cells are mature although individual cell keratinization in the deep parts of the lesion and keratin pearls are seen similar to well-differentiated SCC. However, true malignancy features such as severe cellular pleomorphism and prominent atypical mitoses are not seen in histological assessment of KA. [13,14] Similarly, in our case report, histopathological examination showed proliferation of squamous cells with individual cell keratinization and keratin pearl formation, a few mitoses, and mild atypical figures.

Up to date, few reports have been published on metastatic and invasive KAs. In previous studies, the aggressive behavior and transformation to carcinoma have been reported in about 6% of KA cases, which is likely to be resulted from an inaccuracy in the diagnosis of SCC. [15] In the present study, we found no evidence of any recurrence of the lesion during over 6-months of follow-up of the patient. He was healthy based on the results of clinical examinations, and lymph node involvement was not seen.

Due to the clinical and histopathological similarities between KA and SCC in diagnosis, the first treatment option is excisional biopsy of the lesion. Other options include cryosurgery (used only for small lesions < 0.5 cm), electrodesiccation and curettage, Mohs micrographic surgery, and laser therapy. Moreover, systemic retinoids are either used alone or in combination with topical therapies (such as topical 5-fluorouracil, imiquimod, and topical steroid) for patients with multiple or large lesions. [1, 8, 15,16] In our case, the lesion was solitary, well-circumscribed, and approximately 1 cm in size; therefore, we used excisional biopsy for its removal.

The recurrence rate is between 1% and 8%. Although new KA lesions may develop at the treatment site after 1 week to 8 months from surgery or cryotherapy [17], our case showed no evidence of recurrence during the 6-month follow-up.

Conclusion

Solitary KA lesions are mostly found on sun-exposed skin in older adults, similar to our case. Early diagnosis and treatment could reduce the risks of malignancy and recurrence. Close follow-up of patients with a history of KA is also needed, because the possibility of developing new KA lesions, due to trauma and medical and cosmetic procedures, especially on the UV damaged skin, still exists.

Conflict of Interest

No Conflict of Interest Declared■

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