

**ВИПАДКИ З ПРАКТИКИ**

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**CLINICAL CASE OF KERATOACANTHOMA**M.S. Voloshynovych<sup>1,4</sup>, T.R. Boichuk<sup>4</sup>, V.V. Holotyiuk<sup>2,4</sup>, N.R. Matkovska<sup>3</sup>, V.Ye. Tkach<sup>1</sup>, V.H. Chmut<sup>1</sup>*Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine:*<sup>1</sup>*Department of Dermatology and Venereology,*<sup>2</sup>*Department of Oncology,*<sup>3</sup>*Department of Therapy, Family and Emergency Medicine of Postgraduate Education,*<sup>4</sup>*Lux Skin Clinic, Ivano-Frankivsk, Ukraine,*

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**Abstract. Introduction.** Keratoacanthoma is a common, rapidly growing skin tumour that has long been considered benign due to its staged course and ability to spontaneously regress. However, according to the latest World Health Organization classification, keratoacanthoma is classified as a well-differentiated form of squamous cell carcinoma.

Despite its long history keratoacanthoma remains a subject of controversy with regard to epidemiology, diagnosis, prognosis, and treatment.

The etiology and pathogenesis of keratoacanthoma are also not clearly defined. However, a number of factors have been identified that are highly likely to lead to the development of a tumour. In particular, these are ultraviolet and X-ray radiation, thermal and traumatic injuries, chemical carcinogens, genetic and immunological predictors, human papillomaviruses and certain drugs (sorafenib, infliximab, etc.).

Clinically, keratoacanthoma appears on the skin as a single or multiple crater-like nodule. Dermoscopy can be used for early diagnosis and differentiation from other tumour formations. The choice of therapy varies widely and depends on the location, stage of development, and size of the tumour.

The publication presents a number of cases which demonstrate the clinical, dermoscopic, and histological picture of keratoacanthomas.

**Case presentation.** Patient A, 44 years old, skin with signs of photodamage. A single dense nodule, up to 0.5 cm in diameter, on the anterior surface of the right lower leg. It appeared and grew rapidly over the past month.

Dermoscopy with photographic fixation was performed. A non-pigmented dome-shaped lesion with central yellow-brown keratinous masses, sporadic haemorrhages, and white structureless areas was observed. The vascular pattern was represented by looped, glomerular and helical vessels in a radial arrangement. The lesion was surgically excised. A pathohistological study was carried out. The conclusion was a well-differentiated squamous cell carcinoma of the skin.

In typical cases, the diagnosis of keratoacanthoma is not difficult. However, the combination with other skin lesions can distort the clinical picture. For example, in Patient B, keratoacanthoma developed against the background of seborrheic keratosis. In such cases, the use of dermoscopy can provide additional clues to the diagnosis and, accordingly, influence treatment methods.

Considering keratoacanthoma as a well-differentiated squamous cell carcinoma, surgical excision is preferred. The metastatic potential of this tumour is not significant, but in high-risk areas such as the lip or ear, it can reach 30%. At the same time, surgery reduces the risk of local recurrence. Other approaches include electrodissection and curettage, cryodestruction, intratumoural administration of methotrexate, 5-fluorouracil, bleomycin, and photodynamic therapy. These methods are appropriate in cases where the size or location of the tumour do not allow achieving the desired aesthetic effect.

**Conclusions.** 1. Keratoacanthoma is a well-differentiated squamous cell carcinoma with a low potential for metastasis. 2. Central yellow-brown keratinous masses, sporadic haemorrhages, white structureless areas, in combination with looped and glomerular vessels in radial disposition seen during dermoscopy of a nodule, may be a sign of keratoacanthoma. 3. The choice of treatment method for keratoacanthoma depends on its location and size; surgical excision of the tumour should be preferred.

**Keywords:** keratoacanthoma, clinical picture, dermoscopy, squamous cell carcinoma, classification, treatment, surgery, differentiation.

**Introduction.** Keratoacanthoma (KA) is a common, rapidly growing skin tumour that has long been considered benign due to its staged course and ability to spontaneously regress [1]. However, according to the latest World Health Organization classification, KA is classified as a well-differentiated form of squamous cell carcinoma.

Despite its long history (first described by Hutchinson in 1888) KA remains a subject of controversy with regard to epidemiology, diagnosis, prognosis, and treatment [2].

The etiology and pathogenesis of KA are also not clearly defined. However, a number of factors have been identified that are highly likely to lead to the development of a tumour. In particular, these are ultraviolet and X-ray radiation, thermal and traumatic injuries, chemical carcinogens, genetic and immunological predictors, human papillomaviruses and certain drugs (sorafenib, infliximab, etc.) [3].

Clinically, KA manifests itself as a single or multiple crater-like nodule on the skin. Dermoscopy can be

used for early diagnosis and differentiation from other types of tumours [4]. The choice of therapy varies widely and depends on the location, stage of development, and size of the tumour [5].

**Case presentation.** Patient A, 44 years old, skin with signs of photodamage. A single dense nodule, up to 0.5 cm in diameter, on the anterior surface of the right lower leg. According to the patient, it appeared and grew rapidly over the past month (Fig. 1A).

Dermoscopy with photographic fixation was performed (FotoFinder Medicam 1000s camera in polarisation mode, ultrasound gel was used as a light-conducting fluid). A non-pigmented dome-shaped lesion with central yellow-brown keratinous masses, sporadic haemorrhages, and white structureless areas was observed (Fig. 1B). The vascular pattern was represented by looped, glomerular and helical vessels in a radial arrangement. Post-processing of the photo using machine learning technology was performed to improve the visualisation of the vessels to facilitate their typing [6] (Fig. 1C).



**Figure 1A – C Patient A:** A – clinical photo, a single dense nodule on the anterior surface of the right lower leg; B – dermoscopy, FotoFinder Medicam 1000s camera in 20x polarisation mode; C – dermoscopy, FotoFinder Medicam 1000s polarisation camera and ultrasound gel 40x, ML post-processing.

Based on the clinical and dermoscopic findings, the lesion was surgically excised. Pathohistological study of the material was performed. The focus of proliferation of atypical keratinocytes with cytological atypia was detected. The cells have an uneven eosinophilic cytoplasm and sharply polymorphic, hyperchromic nuclei, multiple figures of atypical mitoses are present. Focally, groups of tumour cells are observed to grow beyond the basement membrane with invasion into the papillary layer of the dermis. The dermis surrounding the tumour proliferates has minor interstitial edema, is infiltrated with a moderate number of lymphocytes, and the vessels are full-blooded

(Figures 2A, 2B). Conclusion: Well-differentiated squamous cell carcinoma of the skin.

In typical cases, the diagnosis of KA is not difficult. However, the combination with other skin lesions can distort the clinical picture. For example, Patient B had a heterogeneous area of scaling on the anterior surface of the left thigh that caused discomfort (Fig. 3A).

Clinically, the diagnosis of seborrheic keratosis was made, but a detailed examination with a video dermatoscope revealed a focal area of specific vascular pattern typical of KA, thus suggesting a case of combined pathology (Fig. 3B).

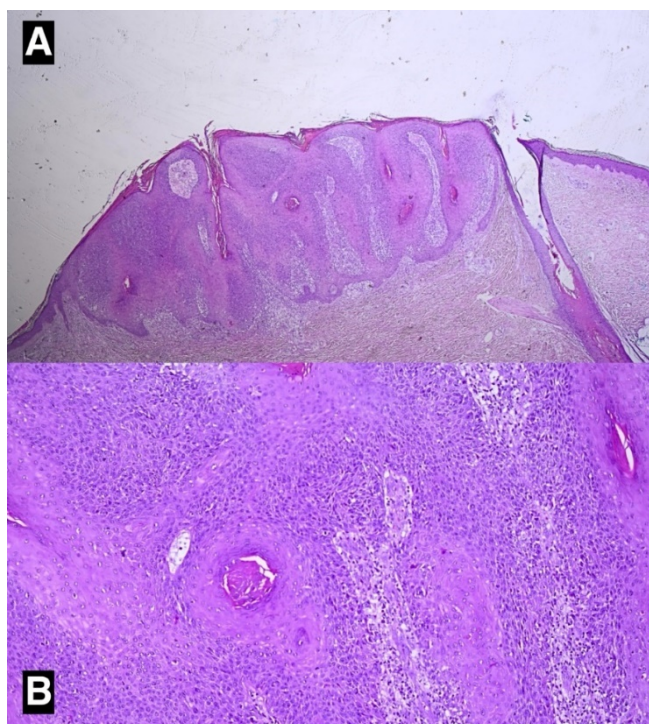


Figure 2A-B: A – Microscopy, H&E, 2.5x. B – Microscopy, H&E, 10x.

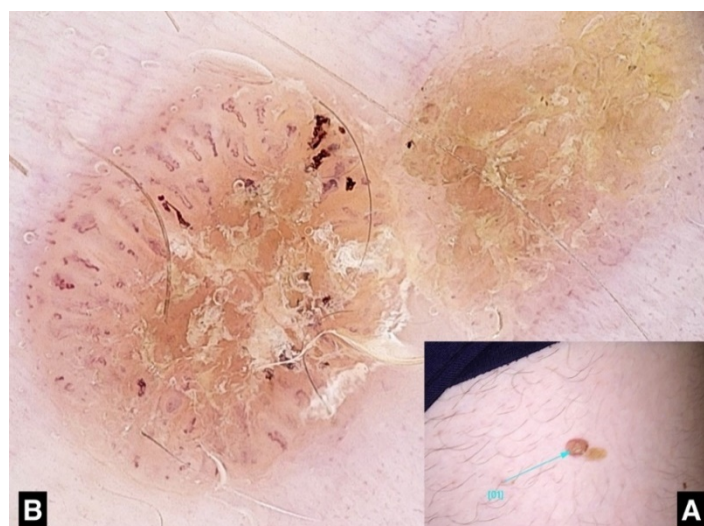


Figure 3A – B Patient A: A – clinical photo, area of hyperkeratosis on the anterior surface of the left thigh; B – dermoscopy, FotoFinder Medicam 1000s polarisation camera and ultrasound gel, KA that developed against the background of seborrheic keratosis.

Considering KA as a well-differentiated squamous cell carcinoma, surgical excision should be preferred as the main treatment method. The metastatic potential of this tumour is not significant and ranges from 4-6%, but in high-risk areas such as the lip or ear, it can reach 30% [1]. At the same time, surgery reduces the risk of local recurrence.

Other therapies include electrodissection and curettage, cryodestruction, intratumoural administration of methotrexate, 5-fluorouracil, bleomycin, and photodynamic therapy. They can be preferred over surgical treatment in cases where there are contraindications to intervention, as well as when the size or location of the tumour affects the aesthetic appearance.

#### Conclusions:

1. KA is a well-differentiated squamous cell carcinoma with a low metastasis potential.
2. Central yellow-brown keratinous masses, sporadic hemorrhages, white structureless areas, in combination with looped and glomerular vessels in a radial disposition seen during dermoscopy of a nodule, may be a sign of KA.
3. The choice of the treatment method depends on the location and size of the KA; surgical excision of the tumour should be preferred.

#### References.

1. Tisack A, Fotouhi A, Fidai C, Friedman BJ, Ozog D, Veenstra J. A clinical and biological review of

- keratoacanthoma. Br J Dermatol. 2021;185(3):487–98. DOI: <http://dx.doi.org/10.1111/bjd.20389>
- Alain J. Management of keratoacanthoma. Curr Dermatol Rep. 2012;1(2):64–8. DOI: <http://dx.doi.org/10.1007/s13671-012-0010-1>
  - Vilcea AM, Department of Dermatology, University of Medicine and Pharmacy of Craiova, Romania, Stoica LE, Georgescu CV, Popescu FC, Ciurea RN, et al. Clinical, histopathological and immunohistochemical study of keratoacanthoma. Rom J Morphol Embryol. 2022;62(2):445–56. DOI: <http://dx.doi.org/10.47162/rjme.62.2.10>
  - Rosendahl C, Cameron A, Argenziano G, Zalaudek I, Tschandl P, Kittler H. Dermoscopy of squamous cell carcinoma and keratoacanthoma. Arch Dermatol. 2012;148(12):1386. DOI: <http://dx.doi.org/10.1001/archdermatol.2012.2974>
  - Ambur A, Clark A, Nathoo R. An updated review of the therapeutic management of keratoacanthomas. J Clin Aesthet Dermatol. 2022;15(11):30–6. PMID: 36381181
  - Voloshynovych M, Girnyk G, Chmut V, Matkovska N, Blaga I, Kozak N. Application of machine learning technologies to improve the diagnostic value of dermatoscopy, combined with digital photo-fixation of skin neoplasms. Dermatol Pract Concept. 2022;12(4):e2022181. DOI: <https://doi.org/10.5826/dpc.1204a181>

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**Резюме.** Кератоакантома – поширена, швидкозростаюча пухлина шкіри, котра через стадійність перебігу та здатність до спонтанної регресії тривалий час розглядалась, як доброякісна. Проте згідно останньої класифікації Всесвітньої Організації Охорони Здоров'я кератоакантома віднесена до високо диференційованих форм плоскоклітинної карциноми.

Незважаючи на тривалу історію, вперше описана *Hutchinson* ще в 1888 році, кератоакантома залишається предметом суперечок стосовно питань епідеміології, діагностики, прогнозу та лікування.

В публікації представлено ряд випадків, які демонструють клінічну, дермоскопічну, і гістологічну картину кератоакантом.

**Презентація випадку.** Хвора А, 44 роки. Одиночний щільний вузол, до 0,5 см в діаметрі, на передній поверхні правої гомілки.

Дермоскопічно спостерігається непігментне куполоподібне утворення з центральними жовто-коричневими кератиновими масами, поодинокими геморагіями, білими безструктурними зонами. Судинний малюнок представлений петлевими, клубочковими та гвинтоподібними судинами в радіальній диспозиції. Утворення висічене хірургічно. Проведене патогістологічне дослідження. Висновок - високодиференційована плоскоклітинна карцинома шкіри.

В типових випадках діагностика кератоакантом не викликає складнощів. Проте поєднання з іншими шкірними утвореннями може спотворювати клінічну картину. До прикладу у хворого В кератоакантома виникла на фоні себореїного кератозу. В таких випадках використання дермоскопії може надати додаткові підказки для діагнозу.

**Висновки:** 1. Кератоакантома являє собою високодиференційовану плоскоклітинну карциному з низьким потенціалом метастазування.

2. Центральні жовто-коричневі кератинові маси, поодинокі геморагії, білі безструктурні зони, в поєднанні з петлевими та клубочковими судинами в радіальній диспозиції побачені при дермоскопії вузликового утворення, можуть слугувати ознакою кератоакантоми.

3. Вибір методу лікування кератоакантоми залежить від її локалізації та розмірів, водночас варто віддати перевагу хірургічному висіченню пухлини.

**Ключові слова:** кератоакантома, клінічна картина, дермоскопія, плоскоклітинна карцинома, класифікація, лікування, хірургія, диференціація.

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