Case Reports in Dermatology

Case Rep Dermatol 2019;11:16–22

DOI: 10.1159/000496329
Published online: January 24, 2019

Case Report

Treatment of Actinic Keratoses Facilitates Dermatoscopic Diagnosis of Early Basal Cell Carcinoma: A Case Report and Review

Alise Balcere[a] Raimonds Karls[a] Ingrīda Čēma[b] Māra Rone Kupfere[a] Ludmila Vīksna[a] Angelika Krūmiņa[a]

[a]Department of Infectiology and Dermatology, Riga Stradiņš University, Riga, Latvia; [b]Department of Oral Medicine, Riga Stradiņš University, Riga, Latvia

Keywords
Actinic keratosis · Dermoscopy · Basal cell carcinoma · Case report

Abstract
Chronic exposure to ultraviolet radiation induces gradual changes in cutaneous morphology, which with increasing damage leads to the appearance of cancerous skin lesions. Among them, basal cell carcinomas (BCCs) and actinic keratoses (AKs) are the most common entities. Both lesions often develop as two separate lesions in a single individual at a conspicuous distance, close proximity or as collision lesions, which are characterized by the coexistence of both cancers in the same anatomical site. Collision lesions in which AK precisely overlies BCC is a rarely reported entity. We report a case where the presence of BCC was dermatoscopically detected after an overlying AK was treated with topical chemotherapy, thus indicating that treatment of AK allows better visualization of other underlying malignancies.

KARGER

Alise Balcere
Department of Infectiology and Dermatology
Riga Stradiņš University, Linezera iela 3
LV–1006 Riga (Latvia)
E-Mail alise.balcere@gmail.com

Introduction

Actinic keratoses (AKs), which can be considered as squamous cell carcinomas (SCCs) in situ, and basal cell carcinomas (BCCs) are the most common ultraviolet radiation-induced keratinocyte skin cancers with high and continuously increasing prevalence. Recent European studies have estimated that AKs affect 25.3% of outpatients above the age of 30 years visiting a dermatologist or a general practitioner [1, 2]. Similarly, the incidence of BCCs is increasing every year with the cumulative risk in Belgium assessed as 11% before the age of 75 years [3, 4]. Both AK and BCC share a substantial amount of environmental and individual risk factors including ultraviolet radiation, fair skin, low ability to tan, higher age, male sex, personal or family history of skin cancer and immunosuppression [1, 3, 5, 6]. Both are markers of cutaneous photodamage and the presence of AK and BCC in a single individual is not uncommon; moreover, the presence of AK has been shown to increase the risk of BCC by approximately 3 times [7].

Dermatoscopy is a noninvasive, widely used real-time diagnostic imaging technique, which renders magnification and translucency of the corneal layer, thus visualizing structures unseen with the naked eye. Dermatoscopy has been shown to improve diagnostic accuracy of pigmented and nonpigmented skin lesions. In the case of AKs, a sensitivity of 98.7% and specificity of 95.0% has been reported [8]. Similarly, for BCC a sensitivity of 95–98.6% and a diagnostic probability of as high as 99% has been reported [9, 10]. Additionally, even in clinically ambiguous cases where BCC and SCC have been inversely misdiagnosed, dermatoscopy yields an odds ratio of 2.9 for the correct diagnosis [11]. The latest updated version of dermatoscopic criteria associated with BCC consist of 12 features describing pigment structures (6), vessel morphology (2), surface characteristics (2), and background structures correlating with dermal fibrosis (2). The criteria can be present in different combinations showing the dermatoscopic variability of BCC [12]. More signs and features can be found in the literature but are less commonly used [13].

Both AK and BCC can cause high morbidity and treatment costs, especially if diagnosis and treatment is delayed thus allowing BCC to increase in size and possibly to a more aggressive subtype [14, 15] and AK to progress towards invasive SCC. Therefore, early diagnosis and management has a crucial role.

We report a case where the diagnosis of BCC was dermatoscopically possible after treatment of overlying AK.

Case Report

An 87-year-old fair-skinned (type II according to Fitzpatrick) female patient with no previous history of nonmelanoma skin cancer presented with multiple AKs on the facial skin. Lesions had been present for approximately 5 years. On clinical assessment, 20 AKs were identified, corresponding to 5.2 on the Actinic Keratosis Area and Severity Index [16] and 2 on the Actinic Keratosis Field Assessment Scale [17]. Before the therapy and during follow-up visits, all lesions were dermatoscopically assessed (polarized light contact dermoscopy) and digital images were taken with the FotoFinder Systems GmbH medicam 1000 device. One of the AKs on the left cheek showed a most inconclusive dermatoscopic picture and therefore was biopsied to exclude minimally invasive SCC. The histology showed AK grade III, parakeratosis, and lichenoid infiltration. No atypical mitoses were present. Treatment with 5% 5-fluoruracil cream was initiated according to the treatment guidelines and a follow-up visit was set after

2 weeks. At that point, treatment had resulted in expected inflammatory response with erythema, erosions, mild crusting, some scaling and dermatoscopically seen peppering. A lesion on the nose that had previously shown a keratin mass and was considered as a hypertrophic AK (Fig. 1) now dermatoscopically consisted of two parts (Fig. 2). On the upper left side, a diffuse erythema, several plugged and targetoid hair follicles, and a whitish brown scale was present, while on the lower right side, short fine radially distributed linear and some branched vessels were visible. Therapy was continued for 1 more week and a follow-up visit was scheduled at 4 weeks following treatment. Then naked-eye examination showed slight depression and, apart from the previously pictured plugged hair follicles, short fine telangiectasia; some arborizing vessels with a small diameter and crystalline structures were visible on a translucent structureless background (Fig. 3). All of the present structures fulfill the dermatoscopic criteria for nonpigmented BCC. Cryodestruction of the newly diagnosed BCC was performed. At the posttreatment follow-up visit, the patient was clinically and dermatoscopically assessed by the treating physician as cleared of the BCC.

Discussion/Conclusion

This case report shows that treatment of AKs allows better clinical and dermatoscopic visualization of other nonpigmented skin tumors and therefore earlier diagnosis and treatment is possible. It can be considered as an additional treatment advantage apart from the well-known cosmetic benefit to the patient and possibly protection from the development of invasive SCC.

Historically the presence of collision lesions in dermatology has been reported by many authors, though AK and BCC was not among the most common combinations [18]. A more recent publication by Blum et al. [19] showed collision lesions between AK and BCC in 2 of 35 collision lesions with a BCC component. Side-by-side collision lesions between AK and BCC by some authors is considered a routine. Nevertheless, collision lesions in which AK precisely overlies BCC are a rarely reported entity. A study by Sambandan et al. [20] reported 8 cases in a 10-year period where biopsy of the superficial portion of the lesion was read as AK or SCC in situ, while deeper biopsy or surgery revealed infiltrative or nodular BCC. In reviewing the literature, we did not find another case where a BCC would have been dermatoscopically detected in a treatment follow-up of an overlying AK.

Some publications state possible progression from AK to BCC, though this idea is not generally accepted. For instance, Criscione et al. [21] observed that 36% of all primary BCCs in high-risk patients with previous nonmelanoma skin cancer arose in lesions that were previously clinically diagnosed as AKs. There is a possibility that the use of dermatoscopy would have increased the accuracy of clinical diagnosis as shown by Ryu et al. [11], who also concluded that BCC may be clinically misdiagnosed as SCC in the presence of scaling.

Three of the dermatoscopic criteria associated with BCC according to the latest updated criteria version were seen in this case – superficial fine telangiectasia, some arborizing vessels with small diameter, and crystalline structures [12]. An additional criterion, translucency, was also present. The named criteria are in consistency with the lesion being an initial BCC before the development of more common criteria according to the known correlations between dermatoscopic and morphological signs [22–27]. In particular, superficial fine telangiectasia and arborizing vessels with a small diameter have been associated with superficial BCCs [25, 26]. Translucency, also called semitranslucency, that can be seen both clinically and dermatoscopically as near-skin-tone colored, smooth, jellylike appearance has been suggested as a

dermatoscopic sign of early BCCs measuring only 3–4 mm in diameter [22, 23]. Histologically translucency has been associated with verified nodular and morpheaform types of BCC [13]. Crystalline, also named chrysalis structures or shiny white streaks, represents collagenous stroma and fibrosis in the dermis [27]. In this case, we cannot exclude that crystalline structures could have appeared due to the treatment with 5% 5-fluoruracil cream. Absence of dermatoscopic pigment structures in this case is not unexpected, as they are more common in darker skin types [12, 28].

The treatment of AK in this case was indicated from the patient's perspective due to cosmetic burden and subjective symptom of slight prickling. From the physician's point of view, the patient was considered as a high-risk patient due to the high AK count (n = 20) on clinical examination. As shown by Green et al. [29], the relative risk of developing invasive SCC is increased by 5–6 times, if up to 20 AKs are present. The risk for developing a BCC is increased by up to 5 times if AK count exceeds 10 [7].

The patient was very content with the AK treatment result, although application site reactions were moderately acceptable.

The strength of this case report was the use of digital dermatoscopy on all AKs before, during and after the treatment and that the computer-aided method, which incorporates clinical and dermatoscopic pictures, allowed the same spot to be captured at every visit.

The limitation of this case was that a biopsy was not done on the newly developed BCC and histopathological subtype was not assessed. Dermatoscopic assessment of all AKs with treatment follow-up in a larger patient sample could identify more cases.

Statement of Ethics

The authors have no ethical conflicts to disclose.

Disclosure Statement

The authors have no conflicts of interest to declare.

Funding Sources

Article processing fees were covered by Remedica – exclusive representative of Bioderma Laboratoire Dermatologique in Latvia.

Author Contributions

All named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship for the manuscript, take responsibility for the integrity of the work as a whole, and have given final approval to the version to be published.

References

1 Fargnoli MC, Altomare G, Benati E, Borgia F, Broganelli P, Carbone A, et al. Prevalence and risk factors of actinic keratosis in patients attending Italian dermatology clinics. Eur J Dermatol. 2017 Dec;27(6):599–608.
2 Dziunycz PJ, Schuller E, Hofbauer GF. Prevalence of Actinic Keratosis in Patients Attending General Practitioners in Switzerland. Dermatology. 2018;234(5-6):214–9.
3 Verkouteren JA, Ramdas KH, Wakkee M, Nijsten T. Epidemiology of basal cell carcinoma: scholarly review. Br J Dermatol. 2017 Aug;177(2):359–72.
4 Callens J, Van Eycken L, Henau K, Garmyn M. Epidemiology of basal and squamous cell carcinoma in Belgium: the need for a uniform and compulsory registration. J Eur Acad Dermatol Venereol. 2016 Nov;30(11):1912–8.
5 Didona D, Paolino G, Bottoni U, Cantisani C. Non Melanoma Skin Cancer Pathogenesis Overview. Biomedicines. 2018 Jan;6(1):6.
6 Apalla Z, Nashan D, Weller RB, Castellsagué X. Skin Cancer: Epidemiology, Disease Burden, Pathophysiology, Diagnosis, and Therapeutic Approaches. Dermatol Ther (Heidelb). 2017 Jan;7(S1 Suppl 1):5–19.
7 Khalesi M, Whiteman DC, Doi SA, Clark J, Kimlin MG, Neale RE. Cutaneous markers of photo-damage and risk of Basal cell carcinoma of the skin: a meta-analysis. Cancer Epidemiol Biomarkers Prev. 2013 Sep;22(9):1483–9.
8 Huerta-Brogeras M, Olmos O, Borbujo J, Hernández-Núñez A, Castaño E, Romero-Maté A, et al. Validation of dermoscopy as a real-time noninvasive diagnostic imaging technique for actinic keratosis. Arch Dermatol. 2012 Oct;148(10):1159–64.
9 Wozniak-Rito A, Zalaudek I, Rudnicka L. Dermoscopy of basal cell carcinoma. Clin Exp Dermatol. 2018 Apr;43(3):241–7.
10 Altamura D, Menzies SW, Argenziano G, Zalaudek I, Soyer HP, Sera F, et al. Dermatoscopy of basal cell carcinoma: morphologic variability of global and local features and accuracy of diagnosis. J Am Acad Dermatol. 2010 Jan;62(1):67–75.
11 Ryu TH, Kye H, Choi JE, Ahn HH, Kye YC, Seo SH. Features causing confusion between basal cell carcinoma and squamous cell carcinoma in clinical diagnosis. Ann Dermatol. 2018 Feb;30(1):64–70.
12 Lallas A, Apalla Z, Argenziano G, Longo C, Moscarella E, Specchio F, et al. The dermatoscopic universe of basal cell carcinoma. Dermatol Pract Concept. 2014 Jul;4(3):11–24.
13 Emiroglu N, Cengiz FP, Kemeriz F. The relation between dermoscopy and histopathology of basal cell carcinoma. An Bras Dermatol. 2015 May-Jun;90(3):351–6.
14 Hoorens I, Vossaert K, Ongenae K, Brochez L. Is early detection of basal cell carcinoma worthwhile? Systematic review based on the WHO criteria for screening. Br J Dermatol. 2016 Jun;174(6):1258–65.
15 Kaur P, Mulvaney M, Carlson JA. Basal cell carcinoma progression correlates with host immune response and stromal alterations: a histologic analysis. Am J Dermatopathol. 2006 Aug;28(4):293–307.
16 Dirschka T, Pellacani G, Micali G, Malvehy J, Stratigos AJ, Casari A, et al.; Athens AK Study Group. A proposed scoring system for assessing the severity of actinic keratosis on the head: actinic keratosis area and severity index. J Eur Acad Dermatol Venereol. 2017 Aug;31(8):1295–302.
17 Dréno B, Cerio R, Dirschka T, Nart IF, Lear JT, Peris K, et al. A novel actinic keratosis field assessment scale for grading actinic keratosis disease severity. Acta Derm Venereol. 2017 Oct;97(9):1108–13.
18 Boyd AS, Rapini RP; AS B. Cutaneous collision tumors. An analysis of 69 cases and review of the literature. Am J Dermatopathol. 1994 Jun;16(3):253–7.
19 Blum A, Siggs G, Marghoob AA, Kreusch J, Cabo H, Campos-do-carmo G, et al. Collision skin lesions – results of a multicenter study of the International Dermoscopy Society(IDS). Dermatol Pract Concept. 2017 Jul 31;7(4):51–62.
20 Sambandan PG, Goldman GD. Infiltrative basal cell carcinomas presenting as actinic keratosis: implications for clinical practice. Dermatol Surg. 2008 Jan;34(1):9–13.
21 Criscione VD, Weinstock MA, Naylor MF, Luque C, Eide MJ, Bingham SF; Department of Veteran Affairs Topical Tretinoin Chemoprevention Trial Group. Actinic keratoses: Natural history and risk of malignant transformation in the Veterans Affairs Topical Tretinoin Chemoprevention Trial. Cancer. 2009 Jun;115(11):2523–30.
22 Stoecker WV, Kolm I, Rabinovitz HS, Oliviero MC, Xu J, Malters JM. Semitranslucency in dermoscopic images of basal cell carcinoma. Arch Dermatol. 2009 Feb;145(2):224.
23 Stoecker WV, Gupta K, Shrestha B, Wronkiewiecz M, Chowdhury R, Stanley RJ, et al. Detection of basal cell carcinoma using color and histogram measures of semitranslucent areas. Skin Res Technol. 2009 Aug;15(3):283–7.
24 Salerni G, Alonso C, Bussy RF. Crystalline structures as the only dermoscopic clue for the diagnosis of basal cell carcinoma. Arch Dermatol. 2012 Jun;148(6):776.
25 Ahnlide I, Zalaudek I, Nilsson F, Bjellerup M, Nielsen K. Preoperative prediction of histopathological outcome in basal cell carcinoma: flat surface and multiple small erosions predict superficial basal cell carcinoma in lighter skin types. Br J Dermatol. 2016 Oct;175(4):751–61.

26 Scalvenzi M, Lembo S, Francia MG, Balato A. Dermoscopic patterns of superficial basal cell carcinoma. Int J Dermatol. 2008 Oct;47(10):1015–8.
27 Lallas A, Apalla Z, Ioannides D, Argenziano G, Castagnetti F, Moscarella E, et al. Dermoscopy in the diagnosis and management of basal cell carcinoma. Future Oncol. 2015 Nov;11(22):2975–84.
28 Tan WP, Tan AW, Ee HL, Kumarasinghe P, Tan SH. Melanization in basal cell carcinomas: microscopic characterization of clinically pigmented and non-pigmented tumours. Australas J Dermatol. 2008 Nov;49(4):202–6.
29 Green A, Battistutta D. Incidence and determinants of skin cancer in a high-risk Australian population. Int J Cancer. 1990 Sep;46(3):356–61.

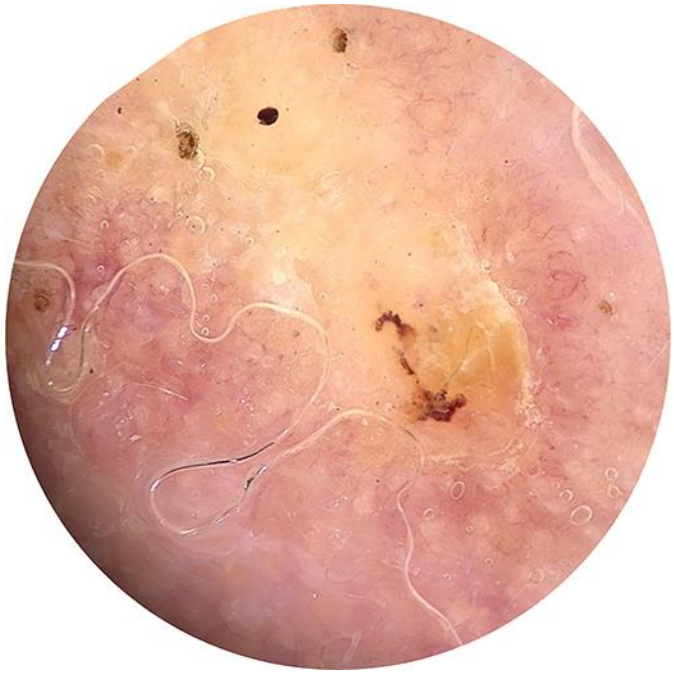

Fig. 1. Dermatoscopic image of a lesion on the nose clinically diagnosed as a hyperkeratotic actinic keratosis.

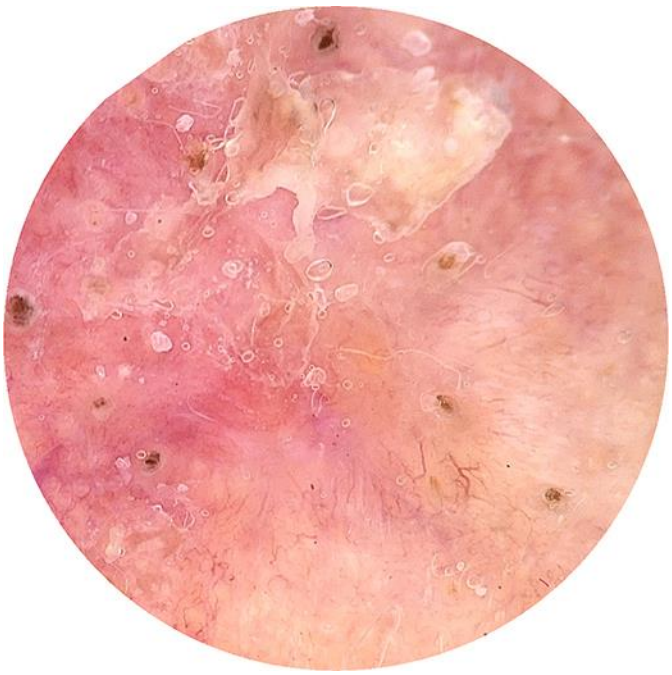

Fig. 2. Dermatoscopic image of the lesion after 2-week treatment with 5% 5-fluoruracil cream.

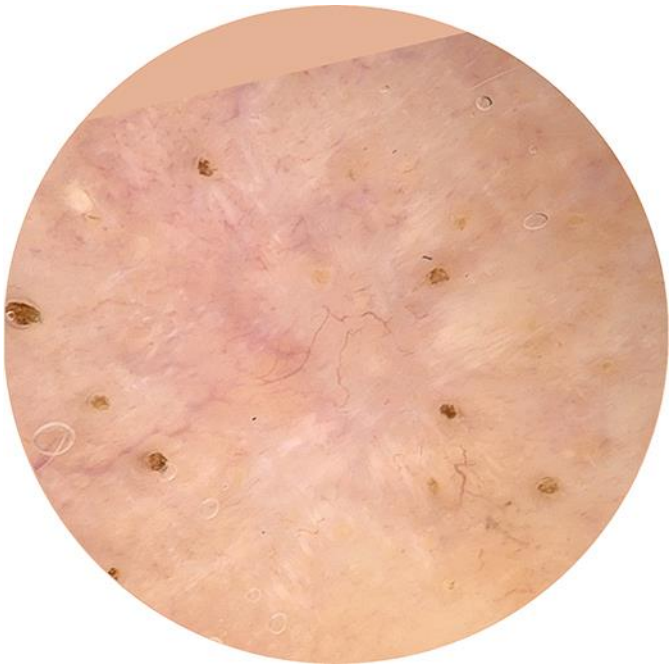

Fig. 3. Dermatoscopy of the lesion at a posttreatment follow-up visit. A translucent hue with short fine linear and branched vessels and shiny white streaks are seen.