Clinical Medicine Insights: Dermatology

REVIEW

Dermatoscopic Features of Non-melanocytic Skin Tumours

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Abstract: Dermatoscopy is a cheap and non-invasive diagnostic technique that improves the diagnostic accuracy of non-pigmented benign and malignant skin tumours. Dermatologist should be aware of dermatoscopic features of non-melanocytic skin tumours to reach the correct diagnosis.

Keywords: dermatoscopy, non-melanocytic skin tumours

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Introduction

Dermatoscopy (also known as dermoscopy, incident light microscopy, epiluminescence microscopy and skin-surface microscopy) is an inexpensive, in vivo and non-invasive technique that permits the visualization of morphologic features that are not visible to the naked eye.[1] Although a 10-fold magnification is sufficient for the assessment of the suspicious skin lesions, magnifications in various dermatoscopy instruments range from 10x to 100x. Dermatoscopy is widely used currently for the diagnosis of pigmented and non-pigmented skin lesions.

There is conflicting data in the literature regarding the history of dermatoscopy. Johan Christophorus Kolhaus investigated small vessels in the nail bed using a microscope in 1636. In 1893, Unna used oil immersion to make the skin more transparent and examined lupus vulgaris lesions.[2] The German dermatologist, Johann Saphier published four reports on his method adding a built-in light source to the dermatoscope in 1920 and 1921. He was the first to use the term "dermatoscopy". In the 1950s, Goldman coined the term "dermoscopy".[3]

Dermatoscopy helps in the diagnosis of many pigmented skin lesions such as seborrheic keratosis, pigmented basal cell carcinoma, haemangioma, blue nevus, atypical nevus, and cutaneous melanoma. It is 10% to 27% more sensitive than clinical criteria of ABCD (asymmetry, border regularity, colour distribution, and diameter) in the early diagnosis of cutaneous melanoma.[4,5] Dermatoscopy of melanocytic lesions increases the presurgical accuracy rate of clinical diagnosis from 50% to 85%.[6,7]

The accuracy of clinical diagnosis of pigmented Spitz nevi improved from 56% to 93% by using dermatoscopy.[8,9] Demirtasoglu et al found that dermoscopy raised the rate of diagnostic accuracy for pigmented basal cell carcinoma from 60% to 90% and reported that dermatoscopy is a valuable diagnostic tool in the diagnosis of pigmented basal cell carcinoma.[10] Use of the dermatoscopic methods by experienced physicians increases clinical diagnostic accuracy for haemangioma and angiokeratoma by 87% to 100%.[11,12]

Basal Cell Carcinoma

Basal cell carcinoma (BCC) is the most common type of skin cancer in humans.[13] It originates from the basal layer of the epidermis. Non-pigmented basal cell carcinomas are much more common than pigmented basal cell carcinoma.[14] In the dermatological examination, non-pigmented BCCs can be easily distinguished from any other skin lesion by their asymmetrical arborising vessels, pink colour, and focal ulceration (Fig. 1).[15] White regression areas may be seen.[16]

Pigmented BCCs sometimes can be difficult to distinguish clinically from melanoma. Dermatoscopy has been proven to be useful diagnostic tool to distinguish pigmented BCC from other pigmented lesions.[16–19] Menzies et al proposed a simple dermatoscopic method for diagnosing pigmented BCCs. This method has a sensitivity of 93% and a specificity

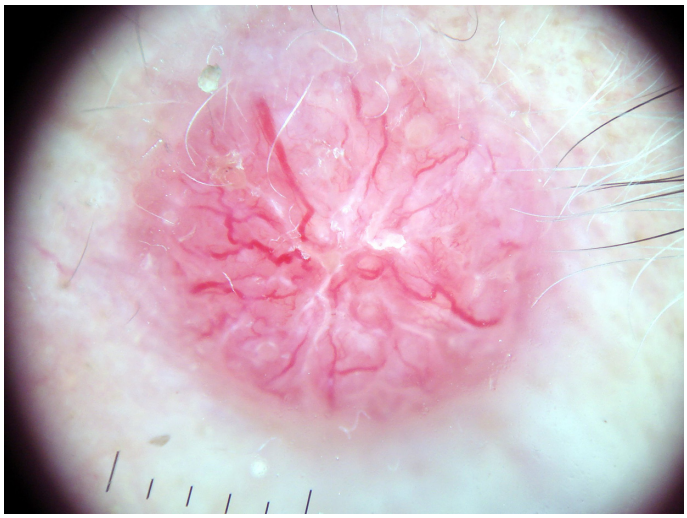

Figure 1. Dermatoscopy of non-pigmented BCC—pink colour, absence of pigment network, and arborising vessels.

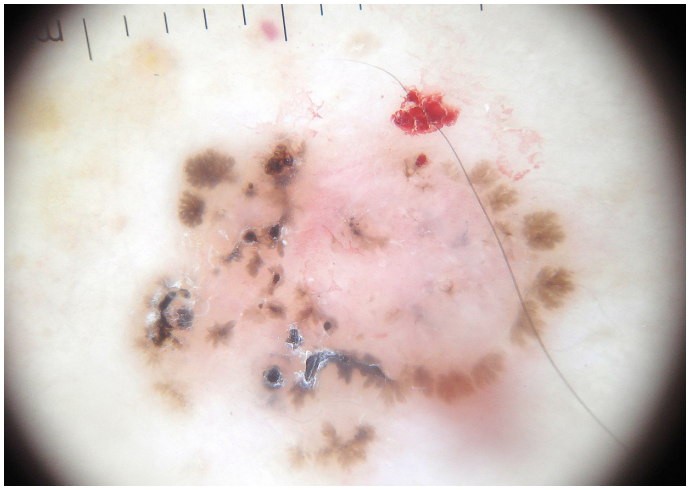

Figure 2. Dermatoscopy of pigmented BCC—structureless areas at the lesion periphery, leaf-like structures, absence of pigmented network, blue-grey globules.

of 89%. In this diagnostic method, a pigmented BCC to be diagnosed must have the negative feature (absence of pigment network) and at least one of the positive features (Table 1).[18]

Seborrheic Keratosis

Seborrheic keratosis (SK) is a common benign skin tumour seen mostly among the elderly population.[20,21] Although diagnosis of SK is generally a clinical diagnosis, sometimes the differentiation between SK and cutaneous melanoma may be difficult in the clinical aspect. Braun et al reported the frequencies of the dermatoscopic structures in SK in a study with 203 patients.[22] Although the classical dermatoscopic criteria of SK that includes multiple milia-like cysts and comedo-like openings had a high prevalence, additional structures such as hairpin blood vessels, fissures, sulci and gyri improved the diagnostic accuracy (Figs. 3–5).[22,23] The dermatoscopic features of SK are easily distinguishable but nonspecific (Table 2).[22–24]

Table 1. Dermatoscopic features of pigmented basal cell carcinoma (Adopted).[16,18]

Negative feature: Absence of pigment network
+ ***at least one of the following positive features***
Linear and arborising telangiectasia
Leaf-like or structureless areas on the periphery of the lesion
Multiple blue-grey globules
Large blue-grey ovoid nests
Focal ulceration
Spoke wheel areas

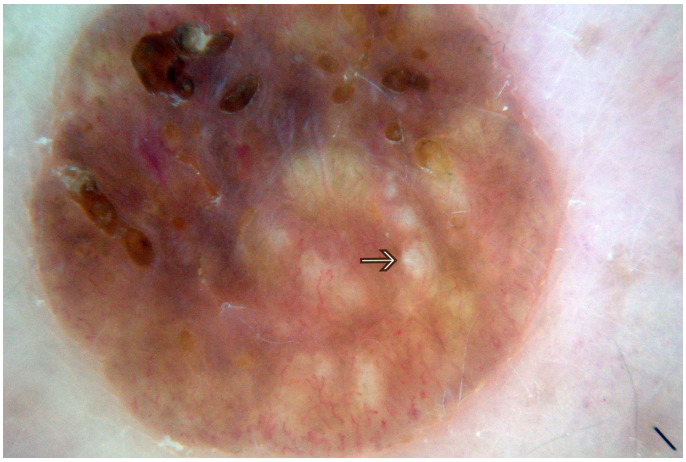

Figure 3. Dermatoscopy of seborrheic keratosis—milia-like cysts.

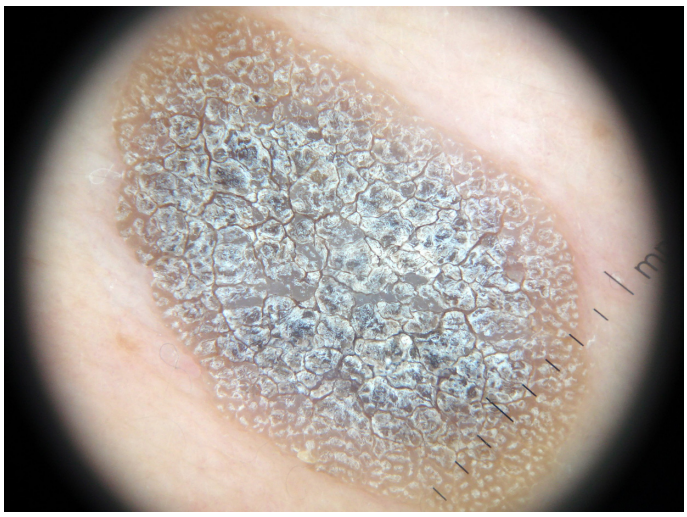

Figure 4. Dermatoscopy of seborrheic keratosis—hyperkeratosis with fissures and ridges.

Figure 5. Dermatoscopy of seborrheic keratosis—cerebriform appearance (sulci and gyri).

Table 2. Dermatoscopic features of seborrheic keratosis.[22–24]

Multiple milia-like cysts
Pseudofollicular (comedo-like) openings
Hyperkeratosis/fissures/ridges
Light brown finger-like structures
Hairpin blood vessels
Cerebriform appearance (sulci and gyri)

Actinic Keratosis

Actinic (solar) keratosis (AK) is a direct precursor of squamous cell carcinoma (SCC) and caused by chronic exposure of UV radiation of sunlight that induces

Table 3. Dermatoscopic criteria of facial actinic keratosis.[30–32]

Pink/red pseudonetwork and erythema surrounding the hair follicles
White to yellow surface scale
Linear or wavy vessels surrounding the hair follicles
Hair follicle openings filled with yellowish keratotic plugs

abnormal proliferation of epidermal keratinocytes.[25,26] AK can be pigmented or non-pigmented. Facial AK is a differential diagnosis of cutaneous melanoma (lentigo maligna) since pigmented facial AK may have a broken-up pseudonetwork.[25–29] Pseudonetwork can be observed in dermatoscopic examination of certain benign pigmented facial lesions such as AK, ephelide, and junctional nevus. Zaluadek et al observed four essential dermatoscopic features in facial AK and defined the combination of these features as "strawberry" pattern (Table 3) (Fig. 6).[30]

Sebaceous Hyperplasia

Sebaceous hyperplasia is a benign proliferation of sebaceous lobules around the follicular infundibulum.[33,34] Yellow nodules surrounding a central follicular opening can be seen in dermatoscopic examination (Fig. 7). Sebaceous hyperplasia must be differentiated from small non–pigmented BCC. Dermatoscopic examination of sebaceous hyperplasia can reveal vessels that extend to the centre of the lesion but they are never arborising.[1]

Dermatofibroma

Dermatofibroma also known as fibrous histiocytoma is a common benign fibrohistiocytic mesenchymal growth of the skin. The aetiology of dermatofibroma remains unclear.[35,36] Dermatofibromas clinically exhibit "dimple sign" with the lateral depression in the overlying skin.[37,38] Since dermatofibromas may mimic other skin tumours including melanoma the definition of their dermatoscopic features is crucial (Fig. 8) (Table 4). In a recent study of 412 dermatofibromas (from 292 patients) 10 different dermatoscopic patterns were observed. The most common dermatoscopic pattern seen in the study group was central white patch and peripheral pigment network (34.7%).[32]

Squamous Cell Carcinoma

The dermatoscopic features of SCC are a non-specific pattern with scales and grouped glomerular blood vessels surrounded by a whitish halo.[15,39,40] A scaly surface, brown globules and glomerular vessels can be seen in the dermatoscopic examination of pigmented Bowen's disease.

Vascular Lesions

Dermoscopy improves the diagnostic accuracy in the clinical evaluation of pigmented skin lesions, but it is also useful for the assessment of vascular lesions such as haemangioma, solitary angiokeratoma, and pyogenic granuloma.[1,17] The most typical dermatoscopic features of the vascular lesions are red, blue or black lacunae (Fig. 9) and red-bluish or red-black homogenous areas. Dermatoscopic features of pyogenic granuloma were first studied by Zaballos et al (Table 5).[41]

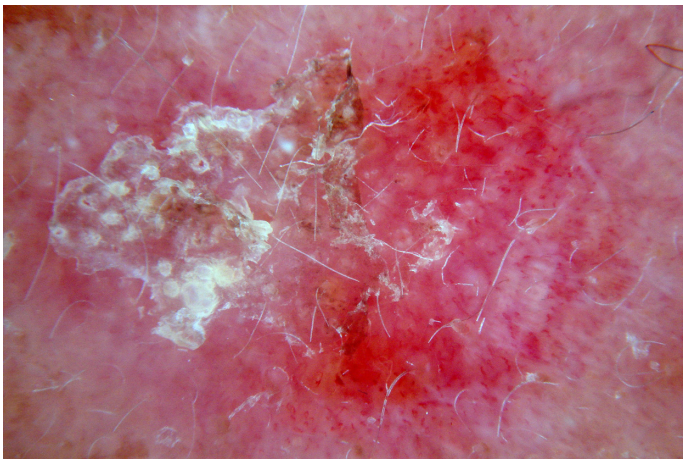

Figure 6. Dermatoscopy of actinic keratosis—white surface scale, erythema, pseudonetwork.

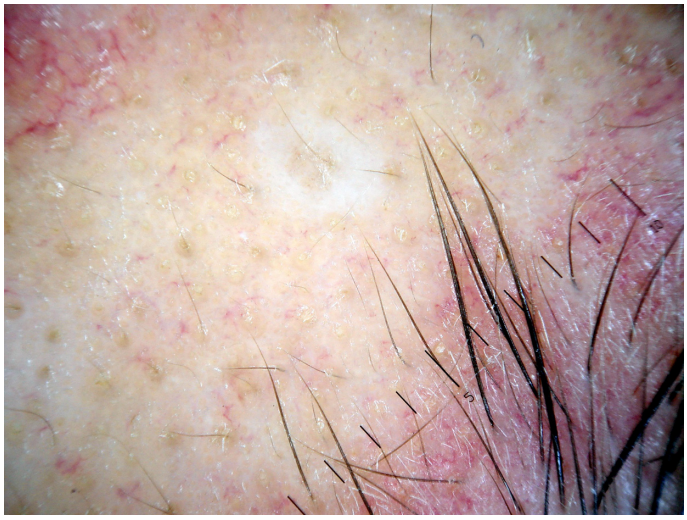

Figure 7. Dermatoscopy of sebaceous hyperplasia—central follicular opening and surrounding yellow lobule.

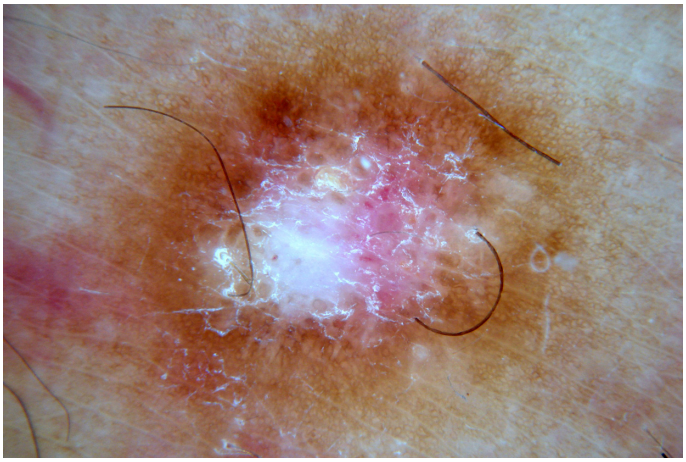

Figure 8. Dermatoscopy of a typical dermatofibroma—Central scar-like patch and peripheral delicate network.

Table 4. Dermatoscopic features of dermatofibroma.[31,32]

Peripheral pigment network
Central white scar-like patch
Different vascular structures
White network
Absence of melanocytic features

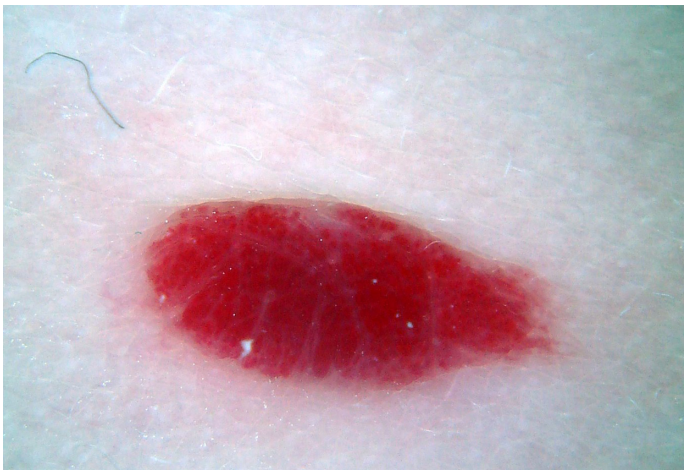

Figure 9. Dermatoscopy of haemangioma—red homogeneous area.

Table 5. Dermatoscopic features of pyogenic granuloma.

Reddish homogenous areas
White collarette
Ulceration
White rail lines intersecting the lesion

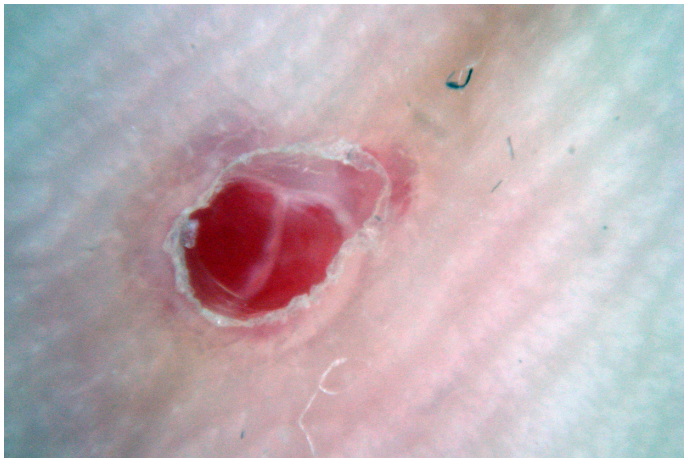

Figure 10. Dermatoscopy of pyogenic granuloma—red lagoons, appearance of white collarette and white "rail lines" that intersect the lesion.

Conclusion

Dermatoscopy improves the diagnostic accuracy in melanocytic and non-melanocytic skin lesions. Thus, every dermatologist should acquire more in-depth knowledge relating to the dermatoscopic features and patterns of the benign and malignant skin lesions.

Disclosures

This manuscript has been read and approved by the author. This paper is unique and is not under consideration by any other publication and has not been published elsewhere. The author reports no conflicts of interest.

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