Dermoscopy for pigmented basal cell carcinoma in Asian patients

皮膚鏡檢查在亞洲患者色素性基底細胞癌的應用

SH Tay, MMF Chan, CC Oh

Introduction: Basal cell carcinoma (BCC) is the commonest skin cancer worldwide, with the pigmented subtype being more prevalent in Asians. In this case series, we aim to illustrate the value of dermoscopy in distinguishing pigmented BCC among Asians. Materials and methods: Six Chinese patients with six pigmented lesions that were clinically suspicious for pigmented BCC underwent dermoscopic evaluation and results were compared to their histopathological correlates. Results: All six lesions were confirmed to be pigmented nodular BCCs histopathologically. Up-to-date dermoscopic criteria for BCC were identified in all six lesions with shiny white lines, a newly added criterion, detected in four lesions. Conclusions: Dermoscopy is a useful non-invasive bedside tool which helps clinicians to differentiate pigmented BCC from other pigmented lesions. Shiny white lines is a potentially useful addition to the commonly accepted dermoscopic criteria for detecting pigmented BCC in Asians.

Keywords: Asian, basal cell carcinoma, dermoscopy

簡介：基底細胞癌是全球最常見的皮膚癌，其色素亞型在亞洲人中更為普遍。在本案例系列中，我們的目的是要說明皮膚鏡檢查在區分亞洲人的色素性基底細胞癌中的價值。取材和方法：對六名華裔患者身上共六個臨床疑似色素性基底細胞癌的色素沉著皮膚病變，進行皮膚鏡評估，並將其結果與其組織病理學相關性互相比較。結果：所有六個病灶經組織病理學證實為色素性結節性基底細胞癌。在所有六個病灶中都發現有最新的色素性基底細胞癌皮膚鏡檢查標準特徵，並且在四個病灶中發現了新的標準特徵「閃亮白線」。結論：皮膚鏡檢查是一種有用的非侵入性臨床工具，可幫助醫生將色素性基底細胞癌與其他色素性病變區分開來。閃亮白線可視為通用於檢測亞洲人色素性基底細胞癌的皮膚鏡檢查標準的潛在有用的補充特徵。

關鍵詞：亞洲人、基底細胞癌、皮膚鏡檢查
of BCCs in Hong Kong Chinese and Japanese patients respectively as compared to just 6% of BCCs in Caucasians.\textsuperscript{1,2} In Singapore, the annual incidence rate of BCCs in the Chinese (Fitzpatrick skin types III to IV) was more than twice of that in the Malays and Indians (Fitzpatrick skin types V to VI), which can be primarily attributed to the increased susceptibility of individuals with fairer complexion to BCC following long-term ultraviolet radiation (UVR) exposure.\textsuperscript{3}

Clinically differentiating between pigmented BCC and benign pigmented skin lesions, especially seborrhoeic keratosis, can be difficult. Both can appear as well-demarcated, hyperpigmented, “stuck-on” papules or nodules with a smooth to verrucous surface. Moreover, seborrhoeic keratoses begin to appear during the fourth decade of life and gradually increase in number, which may confound the identification of pigmented BCCs in Asians.\textsuperscript{3}

Complementing the naked eye, dermoscopy is an increasingly essential tool in contemporary dermatological practice, in particular for the diagnosis of BCC with a sensitivity of 98.6% and diagnostic probability of 99%.\textsuperscript{4-8} In this case series, we aim to illustrate the value of dermoscopy in distinguishing pigmented BCC among Asians.

**Materials and methods**

Six patients (three Chinese males, three Chinese females) with six pigmented lesions that were clinically suspicious for pigmented BCC underwent dermoscopic evaluation by formally trained dermatologists using commonly accepted and up-to-date criteria as summarised in Table 1.\textsuperscript{9}

Clinical photos of the lesions were taken using the clinicians’ cameras and dermoscopic photos were obtained via Dermlite DL 4 (3Gen, San Jose, CA, USA). After dermoscopic evaluation, the clinically suspicious lesions were biopsied and the dermoscopic diagnoses were compared to their histopathological interpretations. Confirmed BCCs were excised with margin clearance. Informed consent was obtained from all patients before enrolment in the study.

**Results**

The clinical and dermoscopic features of each lesion are listed in Figures 1-6 and Table 2. All six lesions were confirmed via histopathology as pigmented nodular BCCs (Figure 2).

**Table 1.** Dermoscopic criteria of basal cell carcinoma

<table>
<thead>
<tr>
<th>Vascular</th>
<th>Pigment</th>
<th>Others</th>
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<tbody>
<tr>
<td>• Arborising vessels (i.e. branched vessels)</td>
<td>• Maple leaf-like areas (i.e. peripheral bulbous extensions with common base)</td>
<td>• Ulceration</td>
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<tr>
<td>• Superficial fine telangiectasias (i.e. serpentine vessels)</td>
<td>• Spoke-wheel areas (i.e. radial lines that converge at central dot or clod)</td>
<td>• Multiple small erosions</td>
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<td></td>
<td>• Multiple blue-grey nodules and ovoid nests (i.e. blue-grey clods)</td>
<td>• Shiny white-red structureless areas</td>
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<td></td>
<td>• In-focus dots</td>
<td>• White streaks (i.e. white lines)</td>
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<td>• Concentric structures</td>
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Figures 1. Clinical and dermoscopic features of pigmented lesions. (a) Patient 1; (b) Patient 2; (c) Patient 3; (d) Patient 4; (e) Patient 5; (f) Patient 6.
All six lesions possessed large blue-grey ovoid nests while arborising telangiectasia and shiny white lines were each observed in four lesions (Patients 1-4 and Patients 2, 4-6 respectively). Blue-grey globules and central ulceration were each identified in three lesions (Patients 1, 4, 6 and Patients 4-6 respectively) and only two lesions were noted to have leaf-like areas (Patients 1, 6).

**Discussion**

This case series demonstrated that dermoscopy is a useful non-invasive bedside tool which helps clinicians to rapidly differentiate pigmented BCC from other pigmented lesions (e.g. seborrheic keratosis, benign melanocytic naevi). In our series, we were able to observe the classic dermoscopic features of pigmented BCC that were in line with those described in current literature and that correlated well with their histopathological characteristics.

Large blue-grey ovoid nests were consistently present in all six lesions whereas vascular structures like arborising telangiectasia were less common. This is in line with the findings of several studies that have reported the lower incidence of vascular structures in pigmented BCCs as compared to their non-pigmented counterparts.\(^5\)\(^10\) In addition, large blue-grey ovoid nests represent pigmentation in the deeper layers of the dermis, which correspond to the histopathological findings of large well-defined tumour nests with pigment

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**Table 2. Clinical and dermoscopic evaluation of pigmented lesions**

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<tr>
<th>Patient details</th>
<th>Location of lesion</th>
<th>Clinical features</th>
<th>Dermoscopic features</th>
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</table>
| Patient 1 (70-year-old Chinese lady) | Inferior to left nostril | 6x7 mm ovoid dark brown papule | 1. Arborsing telangiectasia  
2. Large blue-grey ovoid nest  
3. Leaf-like areas  
4. Blue-grey globules |
| Patient 2 (81-year-old Chinese gentleman) | Inferior to right nostril | 3x4 mm black papule | 1. Arborsing telangiectasia  
2. Large blue-grey ovoid nest  
3. Shiny white lines |
| Patient 3 (55-year-old Chinese gentleman) | Right cheek | 12x10 mm brown-black papule with surface crusts | 1. Arborsing telangiectasia  
2. Large blue-grey ovoid nest |
| Patient 4 (88-year-old Chinese gentleman) | Left to nasal bridge | 10x10 mm dark brown-black nodule with central ulceration and rolled-out edges | 1. Arborsing telangiectasia  
2. Large blue-grey ovoid nest  
3. Blue-grey globules  
4. Shiny white lines  
5. Central ulceration |
| Patient 5 (71-year-old Chinese lady) | Left temple | 10x12 mm round grey-black nodule with central ulceration | 1. Large blue-grey ovoid nest  
2. Shiny white lines  
3. Central ulceration |
| Patient 6 (80-year-old Chinese lady) | Forehead | 8x10 mm ovoid grey-brown nodule with central ulceration and rolled out edges | 1. Large blue-grey ovoid nest  
2. Leaf-like areas  
3. Blue-grey globules  
4. Shiny white lines  
5. Central ulceration |
aggregates invading the dermis as seen in Figure 2. Such a finding has been proven to be highly characteristic of pigmented nodular BCCs along with blue-grey nodules.\textsuperscript{8,11-13}

Shiny white lines refer to the orthogonal short and thick crossing lines seen only with polarised dermoscopy and they may be explained histopathologically as diffuse collagenous stroma and fibrosis in the dermis.\textsuperscript{14,15} The use of shiny white lines was originally limited to the diagnosis of melanoma as it facilitated the differentiation from naevi and in the identification of more advanced lesions,\textsuperscript{14} but a 2016 study by Navarette-Dechent et al. suggested the combined presence of shiny white blotches and strands as a additional dermoscopic feature for it has a diagnostic accuracy of 91\% for BCCs, albeit for non-pigmented subtypes only.\textsuperscript{16} Nevertheless, Shitara et al. in another study found no correlation with any specific histopathological subtype of BCC, though shiny white lines were identified in only 30\% of BCCs.\textsuperscript{17} More studies would be needed to evaluate the importance of this dermoscopic feature for the diagnosis of pigmented BCC, which is more prevalent in the Asian context.

Dermoscopy facilitates the visualisation of subsurface skin structures located within the epidermis, dermoepidermal junction, and papillary dermis, which are otherwise not visible to the unaided eye.\textsuperscript{18} This is achieved by combining increased light penetration into a skin lesion with magnification, and there are currently three types of dermoscopic techniques in use: classic or standard contact, polarised contact and polarised non-contact, all of which in combination permit the physician to assess morphological structures of varying refractive properties. Apart from being lightweight and hence portable, dermoscopy also reduces the number of unnecessary biopsies (i.e. benign-to-malignant excision ratio) by introducing an additional means by which physicians can distinguish between benign and malignant lesions.\textsuperscript{19,20} Dermoscopy can be significantly

**Table 3.** Benign mimics of pigmented basal cell carcinoma

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<th>Benign mimics</th>
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<tr>
<td>1. Seborrheic keratosis</td>
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<td>2. Benign melanocytic naevus</td>
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<tr>
<td>3. Pigmented actinic keratosis/Bowen's disease</td>
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<td>4. Nodular melanoma</td>
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operator-dependent leading to the potential for anchoring bias, search satisfaction and incorrect interpretation of findings. However, this can be avoided with formal dermoscopy training.\textsuperscript{21-23}

All in all, dermoscopy is akin to the stethoscope in the dermatology toolbox with unequivocal evidence supporting its use in skin lesion diagnosis, bridging macroscopic clinical dermatology and microscopic histopathology. While initially limited to dermatologists, dermoscopy has steadily gained popularity in other fields of medicine including primary care.\textsuperscript{20,24,25} With the increasing incidence and burden of skin cancers reported in Asians and especially so amongst the elderly population,\textsuperscript{26,27} physicians are encouraged to use dermoscopy to improve their diagnostic accuracy and triage ability for skin cancer. There have been dermoscopic algorithms that offer methodical and disciplined approaches to skin lesions and some have even performed well in a non-expert setting (family care physicians in Australia who had undertaken self-guided formal training).\textsuperscript{28} In conclusion, our study demonstrates that the role of shiny white lines is an additional dermoscopic feature of pigmented BCC in Asian patients.

**Disclosures**

All authors have no relevant conflicts of interest to declare.

**References**


