Correspondence

Dermatoscopy of a melanoma less than one millimeter in diameter

Sir,

We report the smallest melanoma (0.9 mm and 0.6 mm in diameter dermatoscopically and histologically, respectively) in a 32-year-old female with a history of three melanomas in the previous 3 years. The patient was under automated total body photography follow-up at 3-month intervals (FotoFinder Bodystudio ATBM), and a new 0.9 mm diameter pigmented lesion on her left lateral thigh was detected (Fig. 1). At the time of presentation, dermatoscopic features included eccentric black clods, one pseudopod, and gray branched/reticular lines. All of these clues except the grey color were equivocal. There were no compelling clues to malignancy according to any of the published algorithms except chaos and clues. Although the lesion was reasonably symmetrical, according to Chaos and Clues, a small lesion with any of the nine defined clues to malignancy or any changing lesion on an adult should be considered for biopsy even if symmetrical.[1] Consequently, after additional consideration that this was a high-risk patient, excisional biopsy was performed, and a pathology report of melanoma *in situ* was rendered. Histological examination (Fig. 2) was evaluated by three

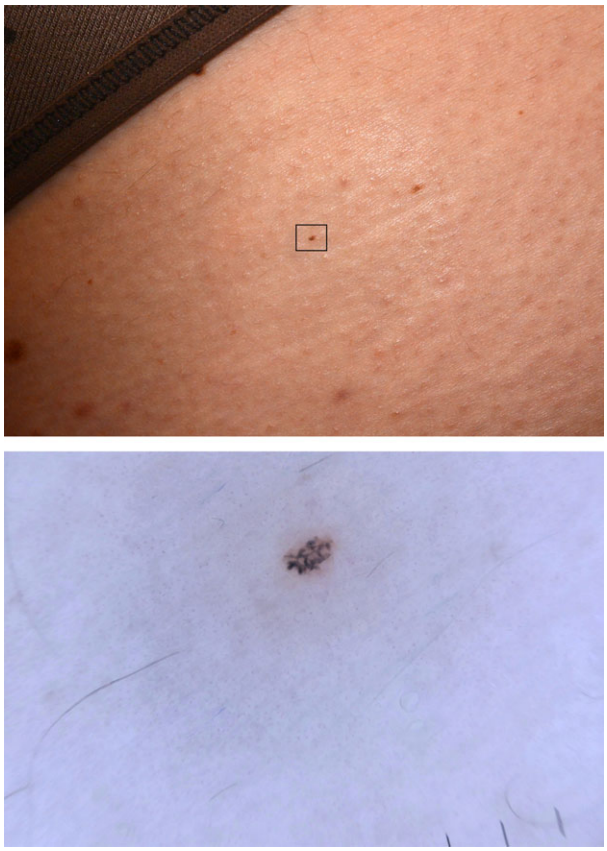

Figure 1 Clinical (upper image) and dermatoscopic (lower image) of a pigmented skin lesion 0.9 mm in diameter as measured on the dermatoscope face-plate scale. Dermatoscopy reveals grey branched lines, one equivocal pseudopod (central upper border) and equivocal peripheral black clods (lower left border). Equivocal clues are best discarded leaving the gray structures as the defining clue

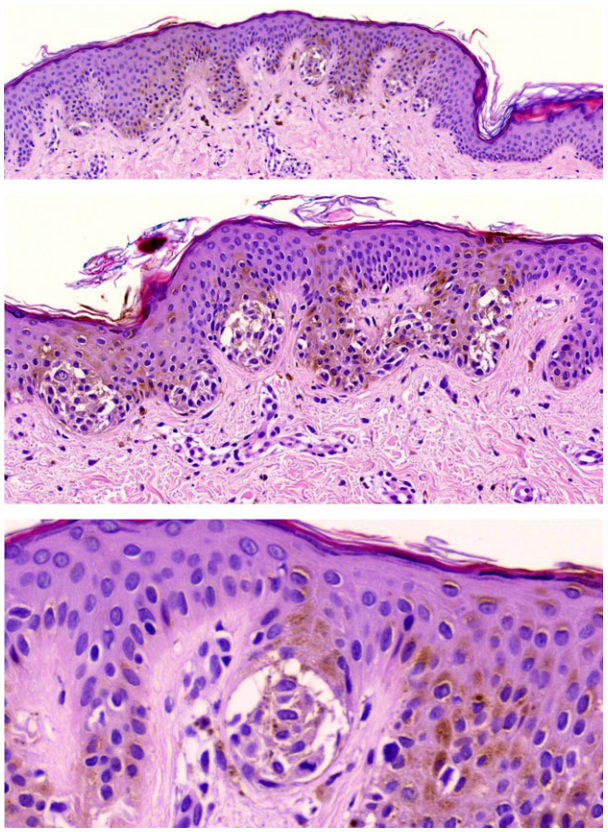

Figure 2 Microscopic sections with H&E stain show an asymmetrical proliferation of melanocytes organized in nests that vary in size and distribution (upper image, H&E ×20.1) and as confluence of single melanocytes. These nests and confluent melanocytes were located not only at the tips of rete ridges but also isolated melanocytes were located within the granular and spinous layers (center image, H&E ×36.0). Nuclear pleomorphism and occasional mitotic figures were seen within the junctional melanocytes (lower image, H&E ×86.3). Dermal infiltration was not detected

pathologists and revealed disorganized nests of melanocytes located at irregular intervals within the basal epidermis and confluence of single melanocytes. Isolated melanocytes were located within the granular and spinous layers. Occasional mitotic figures were observed within the junctional melanocytes. Dermal infiltration was not detected.

As most melanomas are larger than most melanocytic nevi, it is common practice for dermatoscopists not to pay attention to small lesions, with only the larger ones being examined by dermatoscopy. However, all melanomas begin as small lesions, which can subsequently grow in diameter and depth. This is consistent with the theory of tumorigenesis. If a cancer begins as one cell, then even a 1 mm melanoma has a malignant cell population at least in the thousands.[2] This proposal is also consistent with stem cell theory that melanomas could develop from quiescent precursor cells that have accumulated a malignant complement of mutations.[3] Any model proposed for melanomas developing from nevi, at best, can only be applied to a minority of melanomas, being fundamentally flawed for the vast majority which are known to develop *de novo*.

While it was asserted that there were no dermatoscopic criteria to distinguish nevi from *in situ* melanomas,[4] the science of dermatoscopy has progressed to a stage where dermatoscopy is now known to improve accuracy for even *in situ* melanomas.[5]

The clinical ABCDE acronym (asymmetry, border irregularity, color variegation, diameter >6 mm, evolution) was developed as a diagnostic approach for the early detection of cutaneous melanomas while the prognosis is still good. Critics have proposed that the existence of small melanomas (≤6 mm diameter) makes revision of the D criterion appropriate.[2,6] Rosendahl *et al.*,[7] suggested that in the clinical ABCD method, the D for diameter could be appropriately substituted with D for dynamic, arguing that the arbitrary designation of a diameter greater than 6 mm to the clinical diagnosis of melanoma, as in the clinical ABCD method, is inappropriate.

Previously dermatoscopic features of four minute melanomas with a diameter of 1.5–2 mm were reported.[7–10] One of these minute melanomas was invasive.[10] The present case, with a maximum diameter of 0.9 mm, is the smallest melanoma that has ever been reported, and it presented as a changing lesion on an adult with dermatoscopic subtle gray color, these features being sufficient according to the Chaos and Clues algorithm to warrant excisional biopsy.

The melanoma presented here, being 0.9 mm in diameter, is the smallest reported at this time. Every melanoma has to start small, and a threshold of 6 mm will prevent diagnosis at the earliest stages. We believe that especially in high risk patients, even very small lesions which have dermatoscopic clues to melanoma should be excised and submitted for pathological assessment.

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Conflict of Interest: None declared.

doi: 10.1111/ijd.13728

References

1 Rosendahl C, Cameron A, McColl I, *et al.* Dermatoscopy in routine practice - 'chaos and clues'. *Aust Fam Physician* 2012; **41**: 482–487.
2 Goldsmith SM, Solomon AR. A series of melanomas smaller than 4 mm and implications for the ABCDE rule. *J Eur Acad Dermatol Venereol* 2007; **21**: 929–934.
3 Grichnik JM. Melanoma, nevogenesis, stem cell biology. *J Invest Dermatol* 2008; **128**: 2365–2380.
4 Burroni M, Sbano P, Cevenini G, *et al.* Dysplastic naevus vs. *in situ* melanoma: digital dermoscopy analysis. *Br J Dermatol* 2005; **152**: 679–684.
5 Rosendahl C, Tschandl P, Cameron A, *et al.* Diagnostic accuracy of dermatoscopy for melanocytic and nonmelanocytic pigmented lesions. *J Am Acad Dermatol* 2011; **64**: 1068–1073.
6 Green J, Ackerman AB. A 6 mm for diameter in the ABCDs of melanoma? *Dermatopathol Pract Concept* 2000; **6**: 379–382.
7 Rosendahl C, Drugge ED, Volpicelli ER, *et al.* Diagnosis of a minute melanoma assisted by automated multi camera array total body photography. *Australas J Dermatol* 2016; **57**: 242–243.
8 Teng PP, Hofmann-Wellenhof R, Campbell TM, *et al.* Dermoscopic presentation of a 2-mm melanoma *in situ*. *Australas J Dermatol* 2010; **51**: 152–153.
9 Rosendahl C, Cameron A, Bulinska A, *et al.* Dermatoscopy of a minute melanoma. *Australas J Dermatol* 2011; **52**: 76–78.
10 Pellizzari G, Magee J, Weedon D, *et al.* A tiny invasive melanoma: a case report with dermatoscopy and dermatopathology. *Dermatol Pract Concept* 2013; **3**: 49–51.