A Comparative Dermoscopic Approach on Multiple Melanocytic Naevi on Various Body Sites in Different Stages of Development – the First Original Series of Patient Reports on Asian Skin

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Abstract: *Background*: For patients with multiple melanocytic naevi on multiple body sites, strategies to minimise the number of unnecessary excisions include recognising a signature naevus pattern, assessing the stages of development, and comparisons with neighbouring lesions. To our best knowledge, no report has been published on the application of these strategies on Asian skin.

Case reports: We demonstrated application of the above strategies on multiple melanocytic naevi on two young Asian subjects.

Conclusion: For multiple naevi on Asian subjects, the approaches of recognising a signature naevus pattern, assessing the maturities, and comparisons with neighbouring lesions are applicable in reducing the numbers of unnecessary excisions.

Keywords: Congenital melanocytic naevus, melanoma, selective dermoscopy, signature naevus, Spitz naevus, starburst naevus.

INTRODUCTION

For patients with multiple melanocytic naevi (MN) on multiple body sites, monitoring and detecting melanomas can be difficult. Several strategies might be applicable to minimise the numbers of unnecessary excisions. Firstly, a signature naevus pattern (SNP) can be recognised for each part of the body for each patient so that dermatologists can view the morphology of individual MN against such a pattern [1]. Secondly, the different stages of development, also known as maturity, of the MN can be realised by dermatologists so that some deviations from the SNP can be accounted for. Thirdly, comparisons can be made with neighbouring lesions so that minor deviations can be appreciated in the background of multiple naevi [2].

Melanomas are uncommon for Asian subjects. However, when they do occur, they are associated with higher risks of metastases and with higher mortality rates [3]. We have previously reported on the benefits of some of the strategies mentioned in the previous paragraph [4]. However, to our best knowledge, the application of these strategies on multiple MN on multiple body sites on Asians has not been reported.

We hereby report two patients who bear low risks of melanomas in order to demonstrate and simulate how these strategies can be applied on Asian skins.

There are differences between dermatological and histopathological classifications of MN. In this report, we shall adopt a classification [5] simplified as Table **1**.

Table 1: Classification System for Melanocytic Naevi (Simplified) [5]

Congenital naevi	Globular
Acquired naevi	Reticular
Spitz naevi	Starburst
Blue naevi	Homogenous
Site-related naevi	Acral, facial, et cetera
Nevi with special features	Combined, halo, irritated, recurrent
Unclassifiable	Atypical features, melanoma cannot be excluded

The dermoscope we utilised was Dermlite Foto *II* Pro, which captures full-frame images at 4928 X 3280

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E-ISSN: 2310-998X/20

pixels when mounted on a high-grade digital single-lens reflex camera. Image captures are automatically alternated between polarised and unpolarised every time the shutter is released, by means of a wire connected from the dermoscope to the hot shoe of the camera.

CASE REPORTS

Patient 1

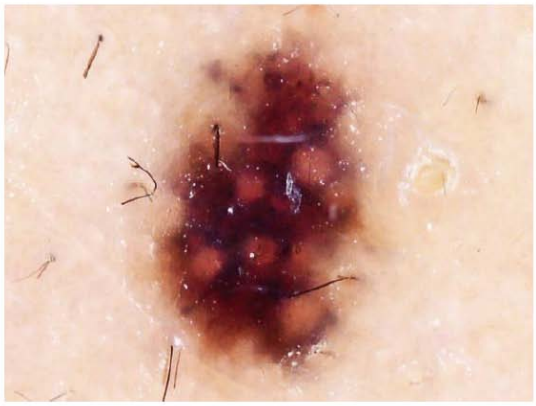
Figure **1** shows 12 MN on Patient 1, a young Asian adult, taken on the same day. It might seem that they are heterogenous, and no SNP could be identified.

We might interpret these MN according to body sites and maturities. Lesion (a) is on the face. It shows a *pseudonetwork*. A *pseudonetwork* means that there is hyperpigmentation interrupted by peri-follicular hypopigmentation regularly. Small similar-sized brownish globules are also seen in the periphery. The pigmentation pattern is regular. This is therefore a benign but actively growing naevus. We do not have another naevus on the face for comparison.

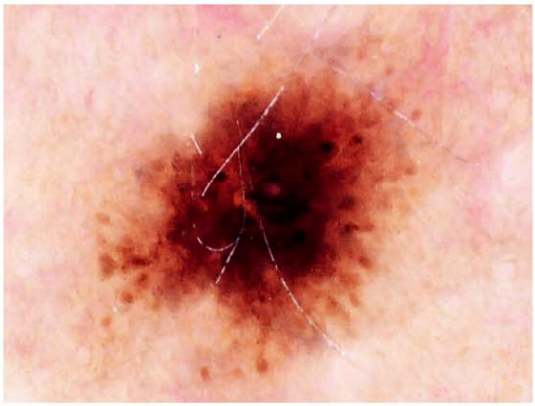
For lesion (b) on the neck, there seems to be some projections and globules in the periphery. We have to consider the possibility of a starburst naevus, which is histopathologically equivalent to a pigmented Spitz naevus. This type of naevus features a dark centre with thumb-like projections radiating out from the periphery. In a pre-pubertal child with this type of naevus, we might just monitor for the symmetrical enlargement of the lesion proportional to the growth of the child. However, for an adult, we cannot differentiate a starburst/pigmented Spitz naevus from a melanoma by dermoscopy [6]. Prompt complete excisional biopsy is therefore indicated for such naevi found on adults.

We judge the stage of development of an MN by its size and its *scale*. *Scale* here refers to the extensiveness of its constituents, such as the number of globules or the complexity of the reticular network. Fortunately, judging from the size and scale of lesion (b), we conclude that it is just an immature lesion. Moreover, *symmetry* is still attained. For *symmetry* here, we are referring to two-dimensional linear symmetry – whether you can draw a line and have two

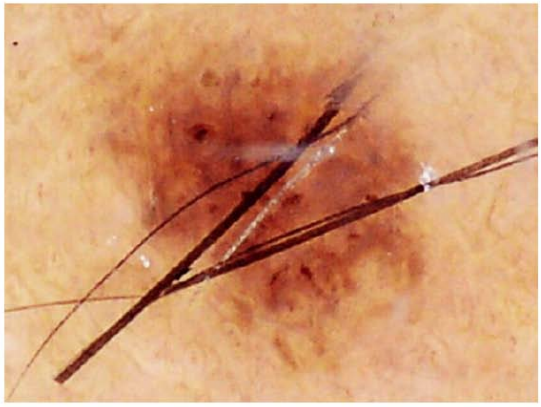
(a) Lesion on the face



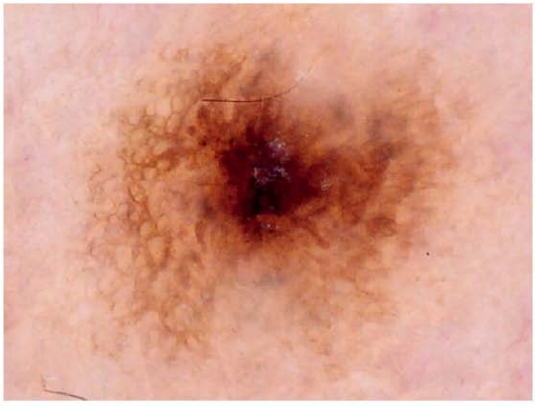
(b) Lesion on the neck



(c) Lesion on the neck



(d) Lesion on the shoulder



(Figure 1). Continued.

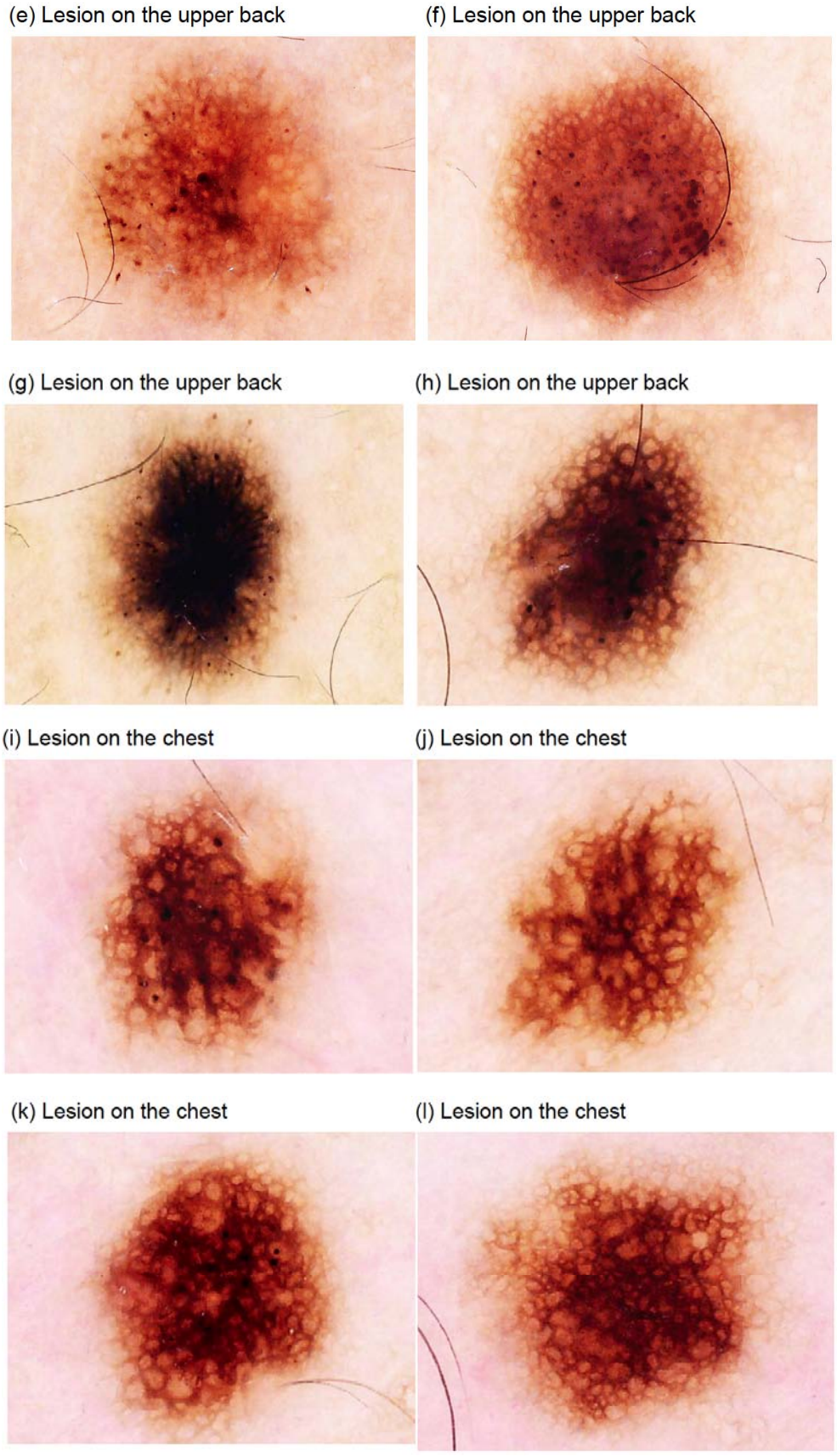


Figure 1: 12 naevi from Patient 1.

sides akin to being mirror images. Lesion (c) on the neck is also relatively immature. We might leave these lesions in the time being.

Lesions (d), (e), and (f) on the shoulders and upper back exhibit a characteristic fine reticular pattern with globules in the peripheries. In this group of lesions, lesion (d) is at an earlier developmental stage. The immature lesions (b) and (c) could be compatible with this group.

Another group with thick reticular networks but with only a few or no globules is identifiable for lesions (h), (i), (j), (k), and (l). In this group, lesion (h) is on the upper back. The remaining four are on the upper chest.

Lesion (g) on the upper back is unique. There is a dark centre, with streaks and globules radiating out in the periphery. It could be a starburst/pigmented Spitz naevus or a melanoma. In adults, the probability of a starburst/pigmented Spitz is low. For its size and scale, lesion (g) is not an immature lesion, and cannot be allocated to any group. We therefore cannot exclude melanoma for lesion (g).

Applying the classification in Table **1**, we would categorise lesion (a) as a facial naevus, with globular configuration. Lesion (b) is a globular naevus. Lesions (c) - (f) bears characteristics of a globular and reticular naevi. Lesion (g) is suspected to be a starburst/pigmented Spitz naevus. Lesions (h) - (l) are predominating reticular naevi.

For Patient 1, we excised lesion (g) only. It turned out to be a benign dermal naevus.

Patient 2

Figure **2** depicts polarised dermoscopic images of 24 melanocytic naevi taken on the same day from Patient 2, also being a young Asian adult.

Lesions (a) - (e) are on the face, thus showing pseudo-networks. Numerous globules are seen in lesion (a), which imply that the lesion is fairly mature. We wonder whether it is a *congenital MN*.

Congenital MN is defined here as *MN seen at birth or before puberty*. Judging whether a MN is a congenital MN is important as the size of a congenital MN is almost directly proportional to the probability that it is or that it will become a melanoma [7,8]. Other than history, pointers to a congenital MN include (i) being globular-predominance (rather than reticular-predominance), (ii) having target networks (circular reticular-like networks with a globule or a vascular component in the centre), (iii) having milia-like cysts, (iv) having terminal hairs or hypertrichosis, and (v) showing perifollicular hyper- or hypopigmentation.

Patient 2 and his mother could not deliver a clear history. We can identify perifollicular hyperpigmentation and hypertrichosis for lesion (a). Together with its being globular-predominant, we judge that lesion (a) should be a congenital MN.

Lesion (b) is immature in development, as there are around 12 globules only. Lesions (c) and (e) are in the very early stages of development. We cannot identify a SNP from early lesions. Numerous globules are seen in lesion (d). However, lesions (a) and (d) share little similarity.

Lesion (f) on the neck is a very early lesion. We do not have another naevus on the neck for comparison. We thus fail to identify a SNP for the face and neck. However, symmetry is still attained for lesions (a) - (f).

Lesion (g) on the upper back is very immature in the stage of development. We could leave such in the time being.

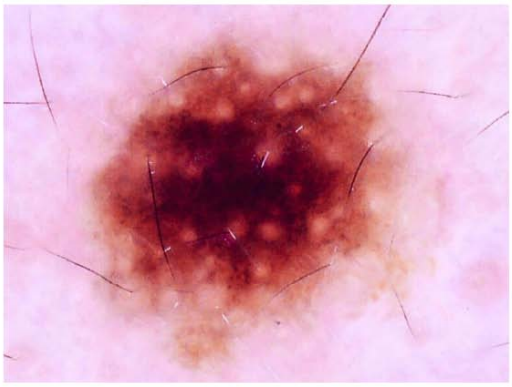
Is lesion (h) on the upper back a starburst/pigmented Spitz naevus? There are globules at the periphery. However, they are not projecting out radially. The lesion does not have a dark centre. Moreover, it is in an early stage of development. Lesion (h) is therefore not a starburst/Spitz naevus. It is also not a melanoma as it is a symmetrical lesion with no diagnostic criteria for melanoma met.

A fine light brown reticular pattern with scanty small brown globules is seen for lesions (i), (j), (k), and (l). This is the SNP on the upper back of Patient 2. That the reticular network of lesion (j) seems thicker and darker is due to the lesion being more mature in development only. This does not deviate lesion (j) from the SNP.

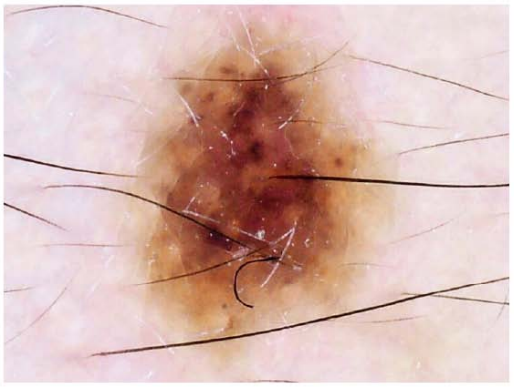
Conversely, lesion (k) is an early lesion with light brown reticular network and a handful of scattered globules. These are related to its early stage of development, not necessarily deviating from the characteristics of the SNP on the upper back of Patient 2.

We can now compare lesion (g) with lesion (k). Both are on the upper back. Both are early lesions, and the

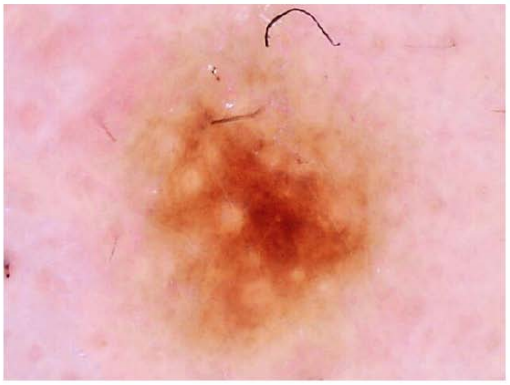
(a) Lesion on the face



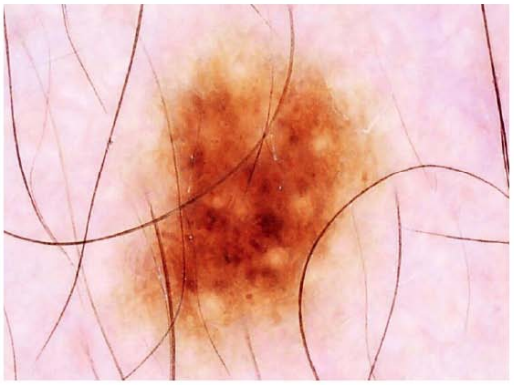
(b) Lesion on the face



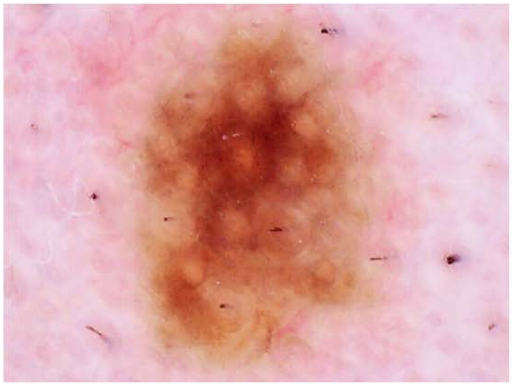
(c) Lesion on the face



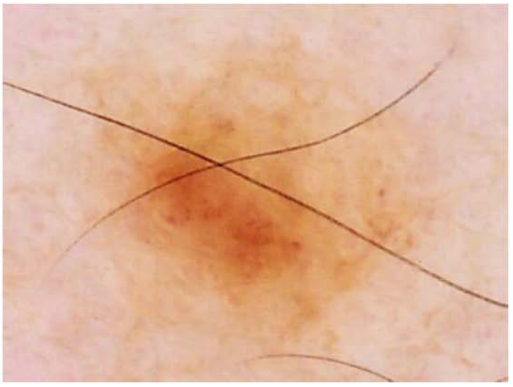
(d) Lesion on the face



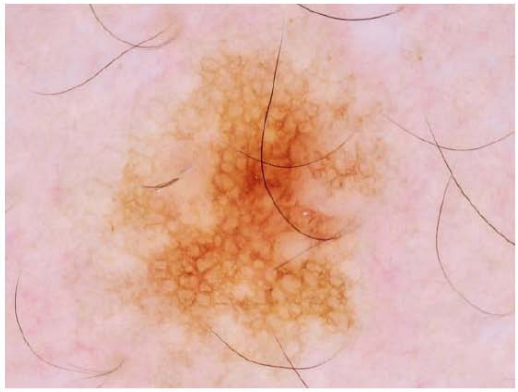
(e) Lesion on the face



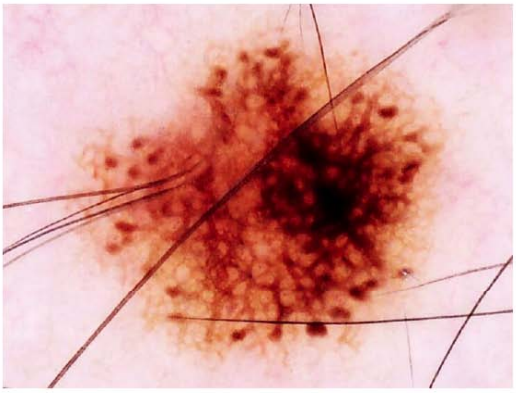
(f) Lesion on the neck



(g) Lesion on the upper back

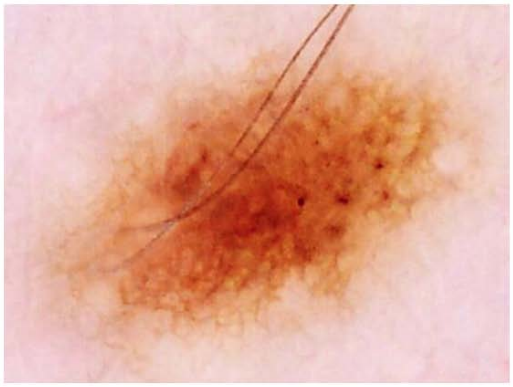


(h) Lesion on the upper back

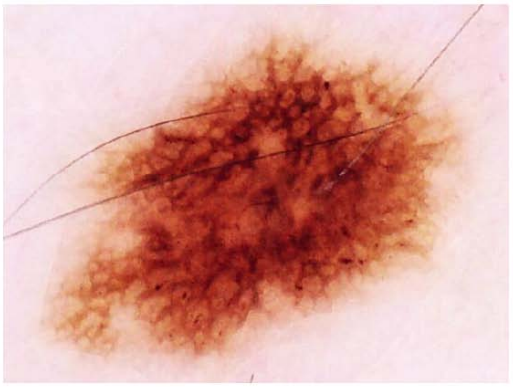


(Figure 2). Continued.

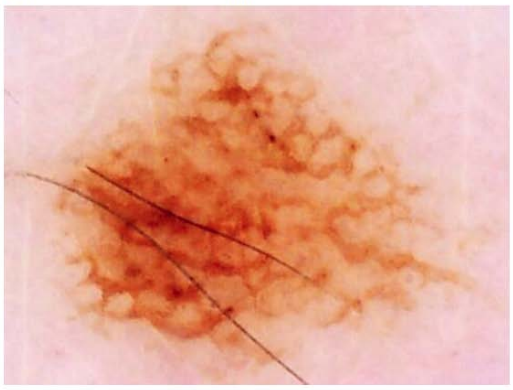
(i) Lesion on the upper back



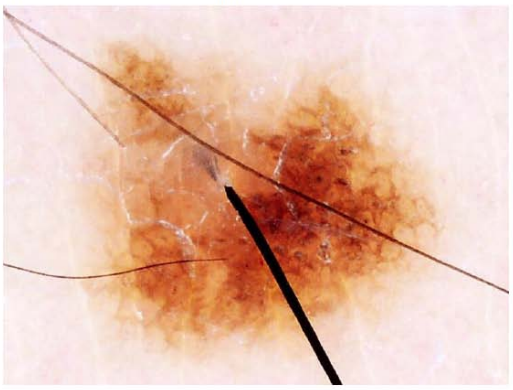
(j) Lesion on the upper back



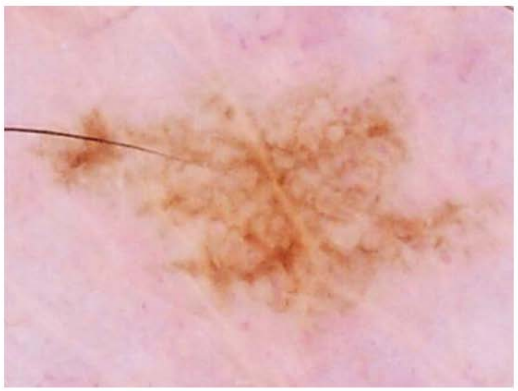
(k) Lesion on the upper back



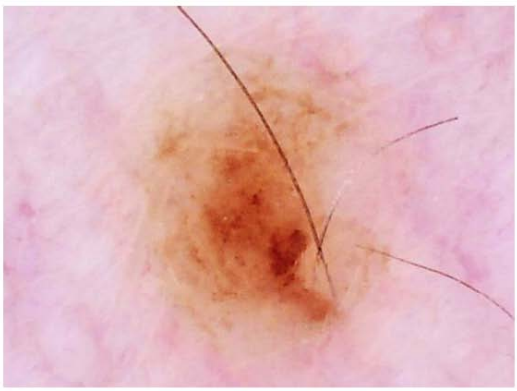
(l) Lesion on the upper back



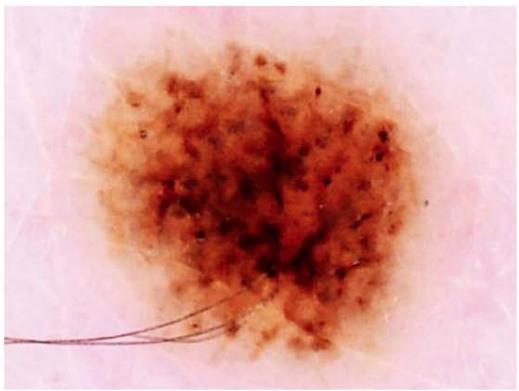
(m) Lesion on the chest



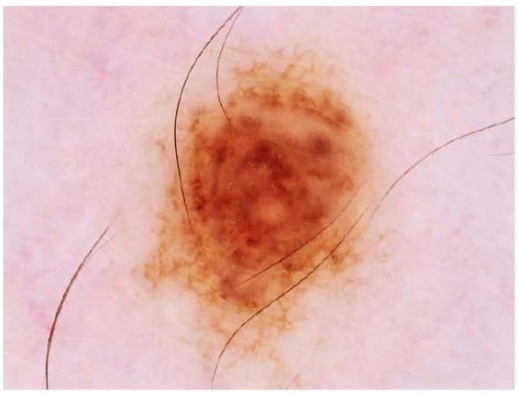
(n) Lesion on the chest



(o) Lesion on the chest

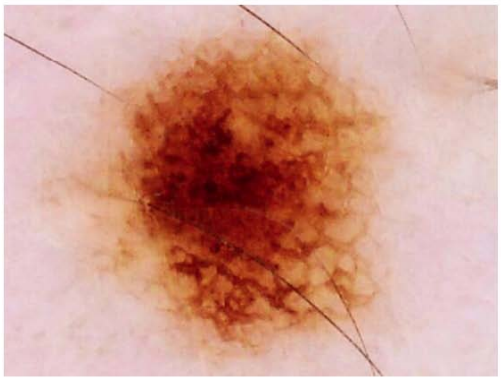


(p) Lesion on the chest

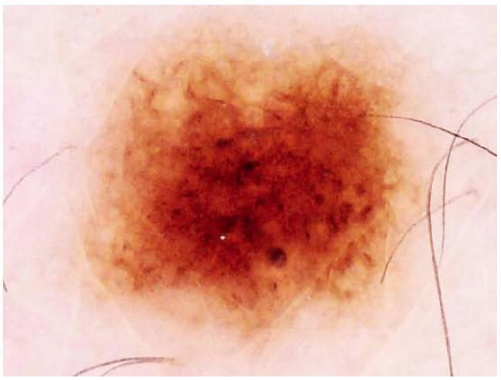


(Figure 2). Continued.

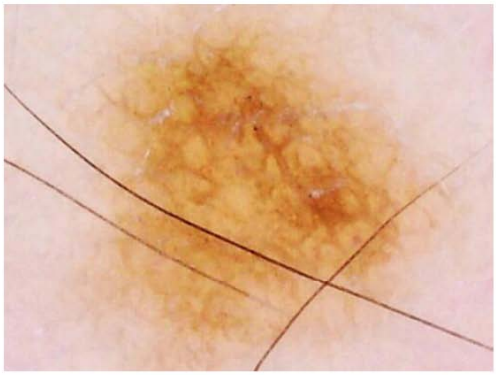
(q) Lesion on the shoulder



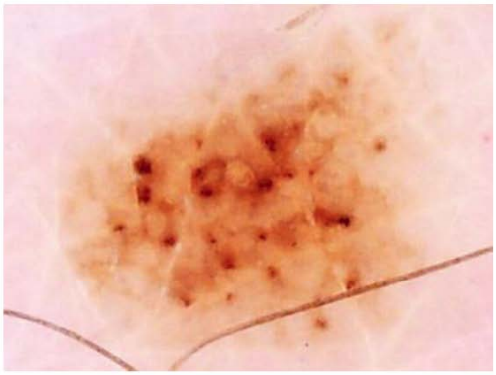
(r) Lesion on the shoulder



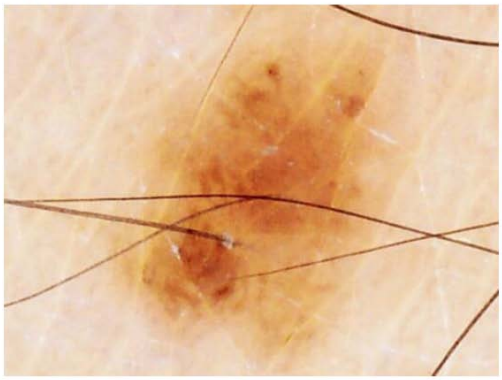
(s) Lesion on the arm



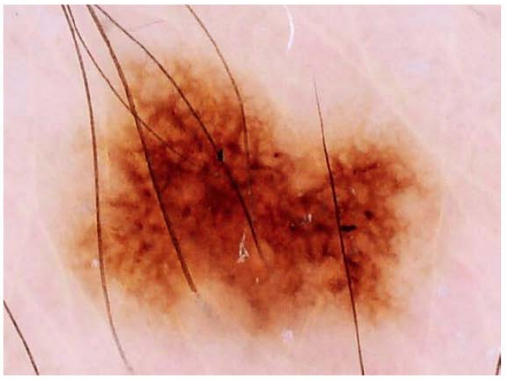
(t) Lesion on the arm



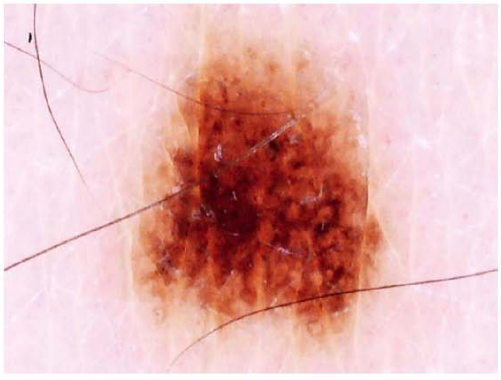
(u) Lesion on the arm



(v) Lesion on the arm



(w) Lesion on the arm



(x) Lesion on the arm

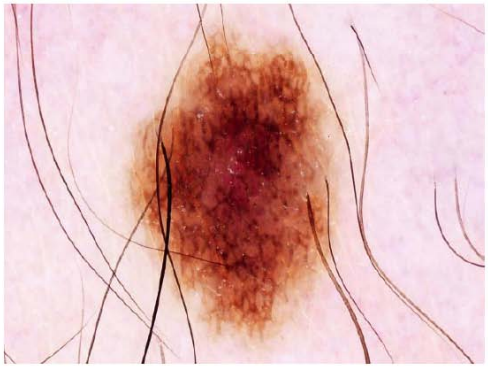


Figure 2: 24 naevi from Patient 2.

reticular patterns are very similar. We can put lesion (g) into the group of lesions (i), (j), (k), and (l) at ease.

Lesions (m), (n), and (p) on the chest are very early lesions. For lesions (o), (q), and (r), we note a pattern of fairly dark brown but still fine reticular network with many more globules in dark brown. This might be the SNP on the chest and shoulders of Patient 2. We can now loop lesions (m), (n), and (p) into this group.

Lesions (s), (t), and (u) on the arms are in early stages of development. Lesions (v), (w), and (x) on the arms conform to the characteristics of the SNP on the chest and shoulders. Lesions (s), (t), and (u) might be compatible with this group on the chest, shoulders, and upper limbs.

Applying the classification in Table **1**, we would say that lesion (a) is a facial naevus, globular, and probably congenital. Lesions (b) - (e) are facial naevi, mainly globular. Lesion (f) is too immature to be classified. Lesion (g) is a reticular naevus. Lesion (h) is predominantly a globular naevus. Lesions (i) - (k) are predominately reticular naevi. Lesion (l) is a globular and reticular naevus. Lesions (m) and (n) are too immature to be classified. Lesions (o) - (r) are globular and reticular naevi. Lesion (s) is an immature reticular naevus. Lesion (t) is a predominately globular naevus. Lesion (u) is too immature to be classified. Lesions (v) to (x) are globular and reticular naevi.

We did not excise any lesion from the Patient 2. The recognition of SNPs on different body parts and in different stages of development removed the need for any unnecessary excision.

DISCUSSION

There exists criteria for differentiating MN from melanoma by dermoscopic morphologies of individual lesions [9]. However, it has been reported that a comparative approach in which expert dermoscopists could compare neighbouring naevi would lead to less naevi being excised than by a morphological approach in which the dermoscopists assessed the morphology of each naevi individually [2]. This approach thus minimises the number of unnecessary excisional biopsies. However, as expert dermoscopists were recruited in this study, this approach might only be applicable to dermatologists or other physicians with expertise in dermoscopy.

The recognition of melanoma from MN by using the information of the peripheral region of the lesions can also be computed-aided, with this approach having been reported to be highly sensitive and specific [10].

Serial monitoring by manual dermoscopy can be labour intensive for populations with high risks of melanomas, which is not the case for most Asian subjects. For serial monitoring to succeed, secure infrastructures have to be in place to achieve a low default rate. Selective dermoscopy has been reported to be cost-effective [11]. However, such might not be applicable to Asians subjects.

One manoeuvre which has not been demonstrated in our two patient reports is to cover some of the naevi from sunlight and re-evaluate once the skin and the naevi have been stabilised. We have found such to be effective for Asians as well as fair-skinned subjects [4].

Total-body photography and *sequential digital dermoscopy imaging* would save much labour and provide higher reliabilities. These techniques are non-invasive, and the potencies of detecting early melanomas are high [12]. However, the low compliance of patients in attending follow-up visits is still a limiting factor [13].

CONCLUSION

We have demonstrated that a comparative dermoscopic approach can be applied to multiple naevi on various body sites in different stages of development on Asian subjects to minimise the number of unnecessary excisions.

COMPETING INTEREST

The authors declare that they have no competing interest.

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Received on 24-04-2020 Accepted on 03-05-2020 Published on 15-05-2020

DOI: https://doi.org/10.12970/2310-998X.2020.08.01