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Using Dermoscopic Criteria and Patient-Related Factors for the Management of Pigmented Melanocytic Nevi

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Abstract

Objective: To review recent dermoscopy studies that provide new insights into the evolution of nevi and their patterns of pigmentation as they contribute to the diagnosis of nevi and the management of pigmented melanocytic nevi.

Data Sources: Data for this article were identified by searching the English and German literature by Medline and Journals@Ovid search for the period 1950 to January 2009.

Study Selection: The following relevant terms were used: *dermoscopy, dermatoscopy, epiluminescence microscopy (ELM), surface microscopy, digital dermoscopy, digital dermatoscopy, digital epiluminescence microscopy, digital surface microscopy, melanocytic skin lesion, nevi, and pigmented skin lesions*. There were no exclusion criteria.

Data Synthesis: The dermoscopic diagnosis of nevi relies on the following 4 criteria (each of which is characterized by 4 variables): (1) color (black, brown, gray, and blue); (2) pattern (globular, reticular, starburst, and homogeneous blue pattern); (3) pigment distribution (multifocal, central, eccentric, and uniform); and (4) special sites (face, acral areas, nail, and mucosa). In addition, the following 6 factors related to the patient might influence the pattern of pigmentation of the individual nevi: age, skin type, history of melanoma, UV exposure, pregnancy, and growth dynamics.

Conclusions: The 4×4×6 “rule” may help clinicians remember the basic dermoscopic criteria of nevi and the patient-related factors influencing their patterns. Dermoscopy is a useful technique for diagnosing melanocytic nevi, but the clinician should take additional factors into consideration to optimize the management of cases of pigmented lesions.

Individuals with multiple pigmented melanocytic nevi or nevi with uneven (atypical) clinical features are considered at increased risk for melanoma development. For this reason, regular dermatologic visits are generally recommended and performed. The management of such cases is a challenge because the clinician has to balance 2 opposite goals: to excise all lesions that could be melanoma while minimizing the number of unnecessary excisions of benign nevi.^{1, 2} The fulfillment of these goals relies on the clinicians' ability to distinguish

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what is “normal” (ie, benign) from what is “abnormal” (ie, malignant) in a given individual (comparative recognition process).^{3,4} Most individuals have a predominant nevus pattern; therefore, the examination of all lesions is an essential step in the recognition process because it allows the identification of lesions deviating from the individual's prevailing benign pattern (concept of the “ugly duckling sign”).²⁻⁹

By allowing visualization of submacroscopic pigmented structures that correlate with specific underlying histopathologic structures,¹⁰ dermoscopy provides a more powerful tool than the naked-eye examination for clinicians to determine the need to excise a lesion.¹¹⁻¹⁸ Recent dermoscopy studies provide new understanding of factors that influence nevus pattern and offer intriguing insights into nevogenesis. Herein, we present a synopsis of the most common dermoscopic patterns associated with nevi and the factors influencing the nevus pattern in a given individual, and we discuss some of the recent concepts of nevogenesis. This summary of key studies focusing on pigmented melanocytic nevi was combined with the personal experience of the authors to make management recommendations.

Editor's Note

This is the first systematic review published with the required table grading the recommendations and reporting the quality of the evidence supporting the recommendations. We encourage authors to review the guidelines for systematic review with graded recommendations prior to preparing a manuscript.¹

METHODS

A literature search of Medline (1950 to January 2009) and Journals@Ovid was carried out using the following keywords: *dermoscopy*, *dermatoscopy*, *epiluminescence microscopy (ELM)*, *surface microscopy*, *digital dermoscopy*, *digital dermatoscopy*, *digital epiluminescence microscopy*, *digital surface microscopy*, *melanocytic skin lesion*, *nevi*, and *pigmented skin lesions (PSLs)*. Systematic reviews, studies, and case reports were reviewed independently by 2 of us (I.Z. and G.A.), and the level of evidence was evaluated using the criteria established by Robinson et al.¹⁹ There were no exclusion criteria.

RESULTS

One hundred eighteen publications were reviewed. No randomized clinical trial or meta-analysis was identified. The overwhelming majority of the publications were prospective or retrospective observational studies from single institutions or multicenter collaborating groups. The quality of the evidence supporting screening recommendations was most often level B; therefore, our recommendations are graded as weak recommendations 2A (Table).¹⁹ Evidence was available for each dermoscopic criterion.

COLOR

With some exceptions, pigmented nevi generally exhibit only 1 or 2 of the following 4 colors: (1) black, (2) brown, (3) gray, and (4) blue. Colors allow estimation of the location of pigmented cells in the skin (Figure 1).^{20-24,64}

¹Robinson JK, Dellavalle RP, Bigby M, Callen JP. Systematic reviews: grading recommendations and evidence quality. *Arch Dermatol*. 2008;144(1):97-99.

OVERALL PATTERN

The presence of uniform and regularly distributed globular, reticular, starburst, and homogeneous blue patterns identify a given lesion as a melanocytic nevus (ie, per definition absence of melanoma-specific patterns).¹⁸ Each pattern corresponds to a specific underlying histopathologic correlate (Figure 2).^{25-29, 65}

PIGMENT DISTRIBUTION

Pigment in nevi may be uniformly distributed or multifocal (patchy distribution of small islands of hyperpigmentation and hypopigmentation), central (central area of hyperpigmentation or hypopigmentation), or eccentric (eccentric foci of hyperpigmentation or hypopigmentation).^{5, 29, 65}

SPECIAL SITES

Nevi located on the face, palms and/or soles, nails, and mucosal areas (mostly genitalia) exhibit peculiar clinical, dermoscopic, and histopathologic features that are related to the specific anatomic structure of the skin in these locations.⁶⁵ Therefore, these nevi are referred to as nevi of special body sites and show a pseudonetwork pattern (face),^{18, 27} parallel furrow pattern (acral areas),^{30-32, 35-37, 66} regular bandlike pattern (nails),^{33, 34, 67-69} and a globular mixed pattern (mucosa).⁷⁰⁻⁷³ For mucosal nevi, no specific studies have been performed yet to our knowledge. Figure 3 illustrates the dermoscopic patterns of nevi on special body sites.

PATIENT-RELATED FACTORS AND DERMOSCPIC CRITERIA

Increasing evidence suggests that both the prevalent nevus pattern and patterns of single nevi are influenced by age, skin type, history of melanoma, UV exposure, pregnancy, and growth dynamics (Table).

Age-Related Nevus Pattern—In prepubertal children, most nevi exhibit a globular or homogeneous pattern, while the most frequent pattern in adults is the reticular (network) pattern (Figure 4).^{38-41, 73} Nevi with a globular pattern are more often located on the head and neck area and upper trunk than are reticular nevi, which can be seen in any areas of the trunk and extremities.^{38, 42, 43}

Skin Type–Related Nevus Pattern—Individuals with skin type I exhibit a predominant nevus type characterized by light brown color and central hypopigmentation. In contrast, nevi in patients with skin type IV tend to be dark brown with a central hyperpigmentation (so-called black or hypermelanotic nevi). Nevi of skin types II and III are prone to be light to dark brown with multifocal pigmentation (Figure 5).^{44, 45}

Melanoma-Related Nevus Pattern—Patients with melanoma more frequently have nevi with a mixed pattern (reticular-globular pattern or homogeneous-globular pattern) vs the more uniform pattern seen in healthy individuals (Figure 6).⁴⁶

UV-Related Nevus Pattern—Nevi exposed to UV radiation reveal reversible changes of dermoscopic features including darkening of pigmentation, fading of pigment network, increase in size, erythema, and new development of irregular dots, globules, or blotches.⁴⁷⁻⁵⁵

Pregnancy-Related Nevus Pattern—During pregnancy, nevi reveal reversible changes including lightening or darkening, progressive reduction of thickness and prominence of

reticular pattern, new appearance of dots or globules, increased vascularization, and increase in size (regardless of the location but most prominently on the abdomen).^{56,59,74}

Growth Dynamics—Evolving nevi, which are typically seen in pubescent adolescents and continue developing through the second decade of life, are dermoscopically characterized by a peripheral rim of small brown globules.^{60,61} During digital dermoscopic follow-up, these nevi show symmetric enlargement, disappearance of peripheral globules, and consequent stabilization of lesion size.

Spitz and Reed nevi reveal different patterns, depending on the growth phase of the lesion. After an initial globular pattern, Spitz and Reed nevi tend to show the classic starburst pattern. The final phase is represented by the homogeneous pattern, although some Spitz and Reed nevi may even completely disappear.^{62,63,75-77}

Conversely, homogeneous blue nevi seem to be highly stable lesions.

COMMENT

The dermoscopic diagnosis of pigmented melanocytic nevi relies on the assessment of 4 main criteria: (1) color, (2) overall pattern, (3) pigment distribution, and (4) patterns related to special sites (Table). Each of the 4 criteria has 4 variables, thus the term 4×4 is a good memory prompt for the criteria and their variables (recommendation 1).

Colors are due to the presence of pigmented melanocytes or pigment-laden melanophages at different levels of the skin.^{20,22,64} Black and brown are due to pigmentation within the epidermis and are the most common colors seen in nevi with a prevailing epidermal component. Gray and blue represent pigmentations found in the upper and middle dermis, respectively, and are often seen in nevi with dermal involvement. Gray and blue may also be due to pigment-laden melanophages in the upper dermis.^{23,24} The combination of gray or blue with white (blue-white structures or granularity) is highly suggestive of regression, in which the white color corresponds histopathologically to fibrosis. Because regression may occur in nevi and melanoma, lesions showing a combination of blue and/or gray and white should always raise the index of suspicion. This is especially the case when a lesion shows a large amount of regression features (ie, >10% of the lesion surface) (Figure 7).^{20,23}

The evaluation of color alone is insufficient to rule out melanoma, but the basic principle “the more colors, the more suspect” is useful for identifying atypical melanocytic proliferations.

Based on the most common dermoscopic patterns associated with melanocytic nevi, we recently proposed a new nevus classification that includes 4 main categories: globular, reticular, starburst, and homogeneous blue nevi.^{72,73} In this classification system, small congenital nevi, compound nevi, and dermal nevi are lumped together in the globular category based on their common dermoscopic-histopathologic features (globules correspond to predominantly dermal nests of melanocytes). With the exception of congenital nevi of the lower extremities,^{42,43} reticular nevi correspond typically to junctional or lentiginous nevi. The starburst nevus category includes both pigmented Spitz nevi and Reed nevi based on their striking dermoscopic features (ie, regular peripheral streaks).²⁸ Finally, the fourth category includes blue nevi typified dermoscopically by homogeneous structureless blue pigmentation without additional dermoscopic features.²¹ Nevi with a homogeneous structureless brown pattern are not considered within the group of blue nevi because they reveal histopathologic correlates similar to reticular nevi.⁷⁸

Even though atypical melanocytic proliferations may exhibit each of these 4 patterns, either alone or in combination, their architecture and pigment distribution are usually much more asymmetric than those of common nevi. Therefore, “the more colors, the more suspect” rule can be extended as follows: “the more colors, the more structures, the more suspect.”^{7, 8, 79} Previous studies suggest a higher probability of a lesion being melanoma when it shows eccentric hyperpigmentation (EHP) or multifocal pigmentation (MFP).^{5, 7, 80} As a consequence, these lesions are closely monitored or excised. A very recent study comparing the presence of EHP and MFP in a series of melanomas and nevi demonstrated that 92% of all melanomas with EHP or MFP exhibited additional melanoma-specific dermoscopic features allowing the correct diagnosis regardless of the pigment distribution.²⁹ Notably, all lesions with EHP but lacking melanoma-specific features were indeed benign. For this reason, the authors concluded that lesions with EHP or MFP, in the absence of another melanoma-specific pattern, do not require closer observation than nevi with other types of pigment distribution (Figure 7 and Figure 8).

Among nevi located on special body sites, acral nevi are those best described in terms of dermoscopic patterns.^{30, 32, 35, 37, 66} They typically reveal pigmented parallel lines located within the furrows of skin markings (parallel furrow pattern), whereas melanoma shows pigmentation on the ridges (parallel ridge pattern).^{81, 83} The differentiation between parallel furrow and parallel ridge pattern may be at times difficult (particularly in the center of the lesion); for these cases, the furrow ink test represents a practical aid for correct diagnosis.⁸⁴ Although the dermoscopic pattern of subungual, facial, and genital nevi have been described in various case series, they are much less well defined, and their assessment and interpretation often requires a high level of expertise.^{69, 70}

Various dermoscopic algorithms have been introduced to help differentiate nevi from melanoma.^{18, 85-90} All diagnostic methods achieve comparable high sensitivity and specificity values, and all conclude with the basic principle “the more colors, the more structures, the more suspect.” It must be acknowledged that none of the algorithms is designed for the evaluation of nevi of special body sites.¹⁸ These algorithms are based on a purely analytic approach, which could be seen as an additional limitation if we consider that most patients with multiple nevi exhibit various degrees of clinical and dermoscopic atypia in a number of their lesions. In these cases a comparative approach would be much more useful (Figure 9). As demonstrated by Gachon et al.³ and Scope et al.,⁴ the immediate diagnostic opinion of dermatologist is mainly based on an unconscious reference to the overall pattern compared with the common nevi but also compared with the other nevi on the individual (the ugly duckling sign) rather than on an analytic process applied to an isolated lesion. The key point in the examination of individuals with multiple nevi is therefore the identification of his or her predominant nevus pattern (defined as the pattern seen in more than 30% of all nevi), which then permits the identification of atypical lesions that deviate from this pattern (recommendation 2).²⁻⁹

Some studies have noted that patient-related factors influence the evaluation of an individual nevus as well as the predominant nevus pattern. Knowledge of these factors and their correlation with dermoscopic features are important for the correct diagnosis and management of nevi. A consistent finding of various independent studies is the age- and body site-dependent prevalence of nevi with a globular pattern (Table). The most common distribution pattern of globular nevi in prepubertal children is on the head and neck area and upper trunk. Reticular nevi prevail in adults and are mostly located on the trunk. A few globular nevi are a very common finding in people of all ages.^{38, 43}

Studies have reported a higher frequency of nevus-associated melanomas on axial body sites, especially the lower extremities.⁹¹⁻⁹³ Notably, the associated nevus component often

shows a congenital-like pattern (ie, dermal involvement) under histopathologic analysis.⁹²⁻⁹⁴ Based on the dermoscopic-pathologic correlation of globular nevi and the more frequent location of this type on the upper axial body sites, the conclusion is that a certain proportion of melanomas arise in nevi dermoscopically characterized by variations of globular pattern. Since the risk of malignant transformation is considerably low, particularly for small congenital or congenital-like nevi, systematic excision of these common nevi is certainly not indicated.⁹² Further investigations into site-related patterns of globular and reticular nevi and dermoscopic patterns of nevus-associated melanomas are needed to confirm these preliminary observations.

Evidence is also emerging on skin type–related differences of nevus pattern.^{44, 45} Scope et al³⁸ found a significantly higher frequency of small reticular nevi on children aged 10 to 11 years with dark skin than on those of the same age with fair skin.³⁸ Our group observed significant skin type–related differences in color and pigment distribution in an adult study population (mean age, 34 years).⁴⁴ Notably, the stereotypical nevus type in persons with skin type IV (also known as hypermelanotic or black nevus) is commonly excised because the clinical black appearance raises the clinician's concern.⁹⁵ Dermoscopically, this nevus shows a dark brown reticular pattern and central hyperpigmentation caused by a central black blotch (“black lamella”) corresponding histopathologically to a pigmented parakeratosis. The black lamella may hide the underlying regular network and cause some diagnostic difficulty, but it can be easily removed by tape stripping, which allows visualization of the underlying network and a more confident diagnosis of a reticular nevus.⁴⁴

Since the skin type influences the predominant nevus pattern, a single lesion with features that differ from those of the others, even in the absence of clear-cut melanoma-specific criteria, is a potential cause for concern and may require closer observation (Figure 9). A further observation is that the predominant nevus pattern of patients with melanoma seems to differ from that of the healthy population.⁷⁰ In a pilot study, a complex dermoscopic pattern (mixed globular-reticular with or without structureless homogeneous pigmentation) was found significantly more frequently in patients with melanoma than in controls, who usually showed nevi with uniform morphologic patterns (Figure 6). Although this study was performed unblinded and needs confirmation, other studies investigating the dermoscopic patterns of atypical nevi seem to confirm preliminary observation.^{46, 96} Certainly further studies are needed, but we agree with the authors' conclusion that individuals with multiple nevi of complex patterns may be at higher risk of melanoma development and so may require closer surveillance than individuals with nevi of uniform patterns.

Regarding surveillance, it is generally recommended to avoid skin cancer screening in patients with tanned skin because the UV irradiation that tanned the skin may also have caused atypical changes in the dermoscopic pattern of nevi that could lead to false-positive results using various dermoscopic algorithms.^{47-55, 85-87} Because these changes generally reverse themselves 1 to 3 months after discontinuation of UV exposure, reexamination should be scheduled for that time.

Pregnancy also induces nevus changes that may cause diagnostic difficulties. It has been shown that these changes linearly increase with the length of pregnancy and are most evident during the third trimester and at the time of delivery.⁵⁶⁻⁵⁹ These changes also reverse themselves approximately 3 to 6 months after delivery, and so reexamination of nevi at that time is usually recommended. Since any change during a 3-month interval must be considered suspect, the physiologic changes of nevi should be taken into account when performing short-term digital follow-up.⁹⁷⁻⁹⁹

In addition to its diagnostic importance, digital dermoscopic follow-up improved knowledge of time-related changes of various types of nevi. Based on the work of Kittler et al,^{60,61} growing nevi can be easily recognized by their striking dermoscopic hallmark of a peripheral rim of small brown globules (Figure 4). These globules seem to correlate histopathologically to small junctional nests at the periphery of the lesion and indicate a symmetric horizontal enlargement during follow-up. Also, Kittler et al⁶¹ report an age-related linear decline in the frequency of enlarging nevi, with enlarging nevi being significantly more common on patients younger than 20 years than they are on older patients.

These data, along with epidemiologic,^{100,101} dermoscopic,¹⁰²⁻¹⁰⁴ histopathologic,^{105,107} and basic research data,^{108,109} provide new insights into the evolution of nevi and lead to the question of whether nevi may arise from different compartments of the skin. We are of the opinion that globular nevi differ histogenetically from reticular nevi. This dual concept of nevogenesis suggests that nevi showing variations of the globular pattern belong to a spectrum of melanocytic proliferations with dermal origin that develop in early childhood along endogenous pathways.¹¹⁰ Globular nevi seem to grow vertically rather than horizontally and are clinically characterized by progressive elevation of the nevus until stabilization is reached. Once stable, the nevi will persist, and after years to decades will acquire the stereotypical appearance of a dermal nevus.^{72,73,110} Although long-term studies supporting this hypothesis are lacking, it is intriguing that Kittler et al⁶¹ clearly show that nevi with scattered or central distribution of globules (not peripheral) undergo no significant horizontal enlargement during a median follow-up period of 11.4 months.

In contrast to globular nevi, we consider reticular nevi to be primarily epidermal proliferations that reveal a dynamic life cycle, increasing steadily in number from puberty until the fourth decade of life and decreasing in number later in life.^{100,101,105,106} In support of this theory is the high number of nevi with a peripheral rim of brown globules found on patients younger than 20 years.⁶¹ In our experience these peripheral globules are particularly evident in evolving reticular or complex-pattern (reticular-globular) nevi, until the final disappearance of peripheral globules indicates stabilization of growth. This nevus life cycle may explain why the most common pattern of nevi in adults is the reticular or reticular-globular pattern.³⁹ The decline in number of acquired nevi after the fifth decade of life can be explained by a progressive involution, regression, or apoptosis of these nevi.^{111,112} Thus an evolving nevus showing a peripheral rim of globules should be considered a highly unusual finding in individuals older than 60 years and should always raise suspicion (Figure 7 and Figure 10).

Digital dermoscopic follow-up improved our knowledge of the evolution of starburst nevi (ie, Spitz and Reed nevi), which may show rapid growth over 3 months. These nevi begin with globules and later develop a starburst pattern, which represents an intermediate pattern of their evolution.^{62,63,75-77} They can be easily differentiated from globular nevi because the globules of evolving starburst nevi (Spitz and Reed nevi) are usually irregular in size and color.²⁸ Epidemiologic data indicate a high frequency of Spitz nevi in childhood that continues until the third decade of life but their number declines later in life.¹¹³⁻¹¹⁵ Our group recently observed the progressive disappearance of 3 starburst nevi during follow-up, suggesting that involution is a possible explanation of this epidemiologic trend.⁷⁷ It must be emphasized that some melanomas may have a starburst pattern.¹¹⁶ Since no single criterion allows differentiating such spitzoid-appearing melanomas from Spitz or Reed nevi with sufficient accuracy, excision of all spitzoid lesions, particularly in adults, is always recommended (Figure 7 and Figure 11).^{117,118}

In contrast to the dynamic of Spitz or Reed nevi, it is commonly accepted that blue nevi are stable lesions that persist throughout a lifetime. This stability of blue nevi is an important, although subjective, clue for the diagnosis because blue color alone is a highly unspecific feature that may occur also in nodular melanoma, melanoma metastases, or pigmented basal cell carcinoma.^{18,21,73} Therefore, the diagnosis of blue nevi should always be based on the combination of the dermoscopic pattern and a convincing subjective history of no changes, while the combination of blue color with a history of changes should always lead to further evaluation for melanoma or basal cell carcinoma (Figure 12). When a reliable history is difficult to obtain, excision, not monitoring, must be performed (Figure 7).

In conclusion, using the dermoscopic 4×4 patterns of pigmented nevi and the 6 factors influencing the individual's nevus pattern might be considered a guide to help the clinician in diagnosing pigmented nevi and managing cases of multiple melanocytic nevi. While most of the dermoscopic patterns of nevi have been well investigated, only partial evidence exists on the individual or environmental factors that influence the patterns of a single nevus or a predominant nevus type. Studies focusing on the individual and the environmental influences on dermoscopic nevus patterns are needed in the future to better understand the role of these factors in the identification of atypical melanocytic skin tumors.

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Figure 1.

Colors allow the physician, to some extent, to draw conclusions about the localization of pigmented cells within the skin. Black and brown (due to melanocytes or pigmented parakeratosis) indicate pigmentation in the epidermis, while gray and blue (due to melanocytes or pigment-laden melanophages) correspond to pigmented cells within the superficial and deep dermis, respectively (hematoxylin-eosin, original magnification $\times 100$).

Figure 2.

The 4 main dermoscopic morphologic structures of nevi correspond to specific underlying histopathologic correlates. This allows the physician to draw conclusions about the histopathologic type of nevi. All dermoscopic images are original magnification $\times 10$; all histopathologic images are hematoxylin-eosin stained, original magnification $\times 100$.

Figure 3.

Body site–related nevus patterns. Facial, acral, subungual, and mucosal nevi show, respectively, a pseudonetwork pattern, parallel furrow pattern, parallel bandlike pattern, and mixed blue-gray globular homogeneous pattern. All dermoscopic images are original magnification $\times 20$.

Figure 4.

Change in nevus pattern and patient age. In prepubertal children and adults older than 60 years, nevi typically reveal a globular pattern, while adolescents exhibit a peripheral rim of globules, and adults show a reticular pattern. All dermoscopic images are original magnification $\times 10$.

Figure 5.
Skin type–related prevalent patterns of melanocytic nevi. All dermoscopic images are original magnification $\times 10$.

Figure 6.

Complex (A) vs uniform (B) nevus patterns. A, Complex nevus patterns are dermoscopically characterized by the presence of more than 1 morphologic structure (in this example, globules, a network, and homogeneous brown pigmentation). B, Uniform brown reticular nevus showing superficial black dots. Both dermoscopic images are original magnification $\times 10$.

Figure 7.
Decision tree for the management of nevi respective dermoscopic patterns and individuals factors influencing the dermoscopic features.

Figure 8.

Side-by-side comparison of a nevus (A) and a melanoma arising in a small congenital melanocytic nevus (B), both showing an eccentric focus of hyperpigmentation. A, The nevus shows an overall regular network without additional morphologic structures. B, In contrast, the nevus-associated melanoma reveals additional melanoma-specific patterns such as irregular dots, globules, streaks, and blotches in the latter. Both dermoscopic images are original magnification $\times 10$.

Figure 9.

The usefulness of dermoscopy for patients with multiple nevi. A, While the clinical overview of the back of a 53-year-old woman with multiple nevi reveals no obvious suspicious lesions, dermoscopy enables the recognition of a prevalent nevus pattern (B and C), which in consequence allows the immediate identification of a lesion that differs from the other nevi (D). Subsequent excision and histopathologic examination of the lesion located on her lower back (A, square-enclosed area) revealed a clinically inconspicuous melanoma in situ (A, inset) that presented dermoscopically as an ugly duckling lesion. All dermoscopic images are original magnification $\times 10$.

Figure 10.

Clinical (insets) and dermoscopic images of evolving lesions. A, Nevus on the chest of a 21-year-old woman might be expected to show a peripheral brown rim of globules. B, However, the same features of an evolving lesion observed on the back of a 61-year-old man are unexpected and should raise the index of suspicion; this lesion was therefore excised and histopathologically diagnosed as melanoma in situ. Both dermoscopic images are original magnification $\times 10$.

Figure 11.

Clinical (insets) and dermoscopic images of a Spitz nevus (A) and a spitzoid-appearing melanoma in situ of the superficial spreading type (B). Side-by-side comparison underscores the rule to excise all lesions with spitzoid patterns because no single clinical or dermoscopic criterion allows an accurate differentiation between the nevus and the melanoma. Both dermoscopic images are original magnification $\times 10$.

Figure 12.

The diagnosis of blue nevus should be always based on the combination of homogeneous blue color and a long-standing, unchanged history of the lesion. In contrast, blue lesions with a history of changes should be always excised. All dermoscopic images are original magnification $\times 10$.

Table**Evidence Supporting Screening With Dermoscopy**

Characteristic	Quality of Evidence
Evaluation of a Pigmented Nevus With the 4 × 4 Criteria: Grade 2A	
Color	Retrospective single and multi-institutional studies ^{20,24}
Morphologic characteristics	Retrospective single and multi-institutional studies ^{5,21,25,28}
Pigment distribution	Case-control ²⁹ and retrospective single and multi-institutional studies ^{5,6}
Site specific	Prospective single and multi-institutional ^{30,34} and retrospective single and multi-institutional studies ^{35,37}
Interpretation of Dermoscopic Findings of the Pigmented Nevus in Light of the Generic Pattern of Nevi in the Individual Using 6 Features: Grade 2A	
Age	Cohort, ³⁸ prospective single and multi-institutional, ^{39,41} and retrospective single and multi-institutional studies ^{42,43}
Skin type	Prospective single and multi-institutional ^{44,45}
Melanoma	Case-control ⁴⁶
UV exposure	Prospective single and multi-institutional ^{47,55}
Pregnancy	Prospective single and multi-institutional ^{56,59}
Growth dynamics	Case-control ⁶⁰ and retrospective single and multi-institutional studies ^{61,63}