Mai P. Hoang
Martin C. Mihm Jr.
Editors

Melanocytic Lesions

A Case Based Approach

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Preface

During the last two decades, there has been a remarkable advancement in the study and understanding of both the nature and the basis for the diagnosis of benign and malignant melanocytic lesions. New classifications of problematic lesions such as Spitz nevus, cellular blue nevus, and the so-called animal-type melanomas and even the atypical melanocytic hyperplasia have led to a clearer understanding of benign versus precursor lesions of melanomas. With regard to the biology of progression of melanoma, the concept of radial and vertical growth phases has helped to prognosticate as well as led to more realistic surgical approaches of the different types of melanomas. One of the very helpful factors is that with prolonged follow-up, we can conclusively better understand prognostic factors such as mitotic rate, age, ulceration, and microscopic satellites, to name a few. The significance of mitoses in melanomas has emerged as a very important prognostic factor, even in lesions less than 1 mm in thickness. With newer diagnostic techniques, there has been a discovery of the genetics of melanoma that helps us to understand familial melanoma. The revolution in molecular biology has also contributed to the understanding of tumor progression.

In contrast to the traditional textbook approach, our book is in the format of cases, emphasizing the need for case studies in this era of inundation with new medical information. Many medical schools in fact have adopted this case method approach to study medicine. Many of these cases are from one of the authors' personal consultation file (MCM); thus, this book also serves as a vehicle to transmit to the medical community the diagnostic clues that he has accumulated during his 40-year consultation practice.

We sincerely hope that this book will serve as a useful resource for pathologists, dermatopathologists, dermatologists, and researchers dealing with melanocytic lesions – as a bridge between the past and new molecular pathology.

Boston, MA, USA — Mai P. Hoang, MD
Boston, MA, USA — Martin C. Mihm Jr., MD

Acknowledgments

To Hòa and Talya (MPH)

To my students and the patients who I have cared for the past 44 years (MCM)

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Lentigo, Other Melanosis, and the Acquired Nevus

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Mai P. Hoang and Martin C. Mihm Jr.

Benign pigmented lesions can occur at anytime in life, but they are more common in childhood and adolescence than later in life. It is estimated that 1 % of all infants have some types of pigmented lesion. The most common form of pigmented lesion in infancy is a lentigo. This lesion derives its name from its oval shape which resembles a lentil. Clinically it appears as a uniformly tan to brown, 4×5 mm, and well-demarcated lesion. Histologically, it has very distinctive features including elongated rete ridges in which there are an increased number of melanocytes present along the basal layer. Sometimes a small nest or two may appear at the tip of the rete ridges. The rete ridges are encased in pink collagen. There are often melanophages present in the dermis reflecting the increased melanin production by the melanocytes. Lentigines can occur anywhere on the skin, even the mucosal sites. The lentigo is important because the adjective "lentiginous" used to describe the hyperplasia along the basal layer is used in benign as well as malignant lesions that will be discussed in subsequent chapters. As indicated, lentigines can be either acquired or congenital. There is a congenital type that varies in size and covers large area of the body – namely, nevus spilus. This lesion has the appearance of lentigo histologically but frequently has small nests containing two to three melanocytes. There are other types of melanocytic lesions that have been designated a given name because of their resemblance to lentigo clinically and histologically. There are other large pigmented lesions that have little or no significant melanocytic hyperplasia but are named by their clinical appearance or their location. One of the most common of these lesions is the solar lentigo. It is usually a macule or slightly raised lesion with variable size, few millimeters to several centimeters in size. The color may be uniformly tan or brown or even speckled. These lesions may be referred as "liver spots" on the sun-damaged skin but also show histologic changes of actinic keratosis or seborrheic keratosis. The histology shows a lesion with irregular epidermal hyperplasia with irregularly shaped and hyperplastic rete ridges. Some of these lesions will be associated with an actinic keratosis and almost all are associated with dermal solar elastosis. Another distinctive lesion is an ink-spot lentigo. This lesion occurs in markedly sun-damaged skin. It usually has an irregular color and reticulated pattern. It

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is characterized by extensive hyperpigmentation of the elongated rete ridges. The clinical picture of a highly reticulated black lesion combined with a histologic picture of prominently elongated and hyperpigmented rete ridges allows for easy diagnosis of this lesion. Another type of lesion associated with increased melanin pigment in basal keratinocytes and some slight increase in melanocytes is the café au lait macule. Furthermore the so-called lower labial macule or mucosal melanotic macule exhibits marked melanosis with only slight melanocytic hyperplasia. It has a very distinctive clinical presentation of very rapid presentation on the lower lip and may vary in coloration from brown to black. It usually measures about 4–5 mm in width. It can have a slightly fuzzy border. This lesion is very stable and does not progress. Histologically, it is a hypermelanosis with minimal junctional melanocytic hyperplasia. If the lesion continues to grow, one must suspect lentigo maligna, and a biopsy is indicated. Finally, the vulva melanosis is a very important lesion that varies from few millimeters to covering the entire labia minora. These lesions are consisted of increased melanin pigment within basal keratinocytes without an increased number of junctional melanocytes.

Nevi can also occur at birth or can be congenital. Acquired nevi can occur any time after birth and usually are scattered and few in number but favor the head and neck region and the trunk above the beltline. Most lesions begin as flat or slightly raised pigmentations that vary in color from tan to dark brown. The early presentation of the nevus is a junctional nevus that is oval to round that measures no more than 5 mm in greatest dimension. Over time the lesions become raised and have a characteristic pigmentation, dark in the center and lighter at the periphery. This is characteristic of the compound nevi. Dermal nevi that are present especially in the head and neck regions are dome-shaped and usually dark brown to blue black and often become paler as the patient ages. Most compound nevi will become dermal nevi that vary in color from flesh to brown to dark brown and rarely to blue black. This evolution describes the common nevi that must be distinguished from Spitz and blue nevi which will be discussed separately. Patients who have the dysplastic nevi, which will be covered in depth in Chap. 7, have nevi scattered throughout their body. Dysplastic nevi will favor sites that are covered in contrast to common nevi that rarely appear on the scalp, buttock areas, and the breasts of women. With regard to the acquired benign lesions, symmetry is characteristic, while many nevi show an intraepidermal nested proliferation. There is an associated dermal component that is usually equal in distance to the intraepidermal component. If there is lateral extension of the intraepidermal component, it extends symmetrically, so there is no eccentric extension of the intraepidermal component beyond the dermal component.

Normal melanocytes are pigment-synthesizing cells that possess prominent dendritic processes and are confined to the epidermis. One epidermal melanocyte provides melanin for approximately 5–20 keratinocytes. They do not divide and rarely populate the skin after removal. On the contrary, the melanocytes within the nevus are not dendritic in morphology and have the capacity of dividing (Robinson et al. 1998). The acquired nevi are thought to be derived from cells of neural crest (Weston 1998; Quevedo and Fleischmann 1980). The nevomelanocytes are classified as type A, type B, or type C (Masson 1951; Mishima 1965).

The process of evolution of acquired nevi includes an intraepidermal proliferation of cells that form nests, cohesion of cells, and a free space around the nests. Melanin granules are usually coarse. Careful examination reveals small stubby processes that either abut the adjacent keratinocytes or attach to other melanocytes. The accepted theory of growth of nevi includes the passage of the so-called type-A cells into the dermis in which they usually lose pigmentation and form small nests containing round to oval cells. Type-A cells are found within the epidermis and superficial dermis. They have small nuclei and a tiny nucleolus and can show cytoplasmic pseudo-nuclear vacuole. Sometimes these

cells are pigmented in the superficial portion of the dermis but lose completely the pigment as the lesion extends downward. Finally the cells become oval and fusiform. The round-oval and nonpigmented cells with scant eosinophilic cytoplasm are called type-B cells. They resemble the small lymphocytes or mast cells. The fusiform cells are called type-C cells (Lund and Stobbe 1949; Masson 1951; Maize and Foster 1979). They can form neuroidal structures as the lesion persists. It is accepted that during the evolution of an acquired nevi, the intraepidermal component disappears and the dermal component neurotized (Lund and Stobbe 1949; Stegmaier and Montgomery 1953; Stegmaier 1959; Maize and Foster 1979). The common acquired nevi are a phenomenon of the epidermis and papillary dermis. As the lesion expands it does not enter the reticular dermis but present as a raised papule. These lesions are totally different from Spitz, blue, and congenital nevi that predominantly involve the reticular dermis.

Case 1A

Clinical History A 70-year-old female with prior history of malignant melanoma presented with a 1.0 × 1.0 cm variably pigmented tan-brown macule on her right posterior shoulder.

Microscopic Description In a punch biopsy of the skin, there is multifocal elongation of the rete ridges (Fig. 1.1). There is an increased number of benign melanocytes in the basal region of the rete ridges. There is definite increase in melanin pigment in the basal and suprabasilar keratinocytes of these rete ridges (Fig. 1.2). The pigmentation appears to be denser at the tips (Fig. 1.2).

Diagnosis Lentigo simplex

Comment A lentigo often presents clinically as a circumscribed, tan to dark brown, several millimeter, and uniformly pigmented macule that is not sun induced (Ber Rahman and Bhawan 1996). They tend to be larger at sites such as the genitalia, palms, soles, and mucous membrane. Lentigo simplex may occur as a localized lesion or in association with a syndrome, such as LEOPARD (lentigines, ECG/electrocardiogram abnormalities, ocular hypertelorism/obstructive cardiomyopathy, pulmonary valve stenosis, abnormalities of genitalia in males, retardation of growth, and deafness); LAMB (lentigines, atrial myxomas, and blue nevi) (Carney complex); Peutz-Jeghers, Laugier-Hunziker, and Bannayan-Riley-Ruvalcaba syndromes; Addison's disease; familial generalized lentiginosis; and centrofacial lentiginosis (Coppin and Temple 1997; Jeghers et al. 1949; Carney 1995; Rhodes et al. 1983; Voron et al. 1976).

This particular lesion, while exhibiting characteristics of lentigo simplex, also shows irregular rete ridges seen in solar lentigo. Often there is pigment incontinence. The histologic features include hyperpigmentation of the elongated rete ridges and mild increase in the number of junctional melanocytes. Occasionally, small clusters of melanocytes are seen at the tip of the rete ridges; thus, the terms "jentigo" and "nevus incipiens" have been used (Ber Rahman and Bhawan 1996).

Key Histologic Features

Lentigo simplex (Figs. 1.1 and 1.2)

- Hyperpigmentation of basal keratinocytes associated with elongated rete ridges
- Mild increased number of junctional melanocytes

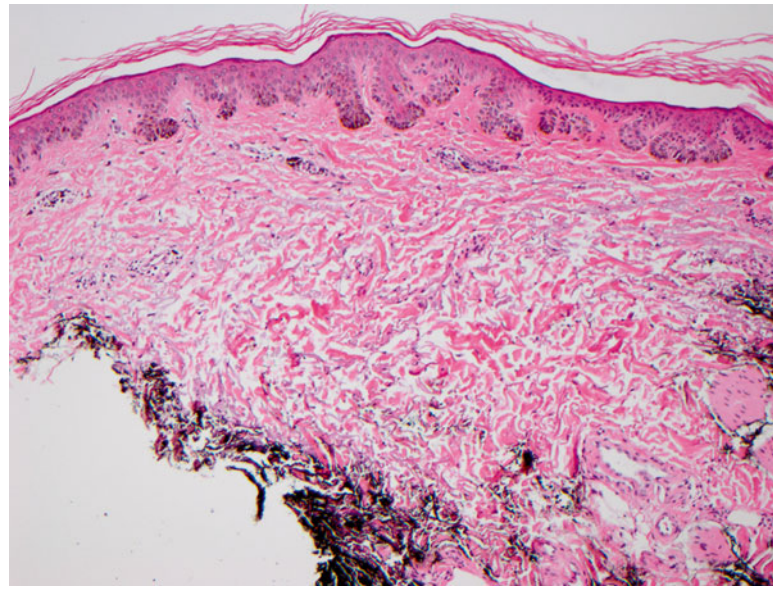

Fig. 1.1 Elongation of rete ridges is noted

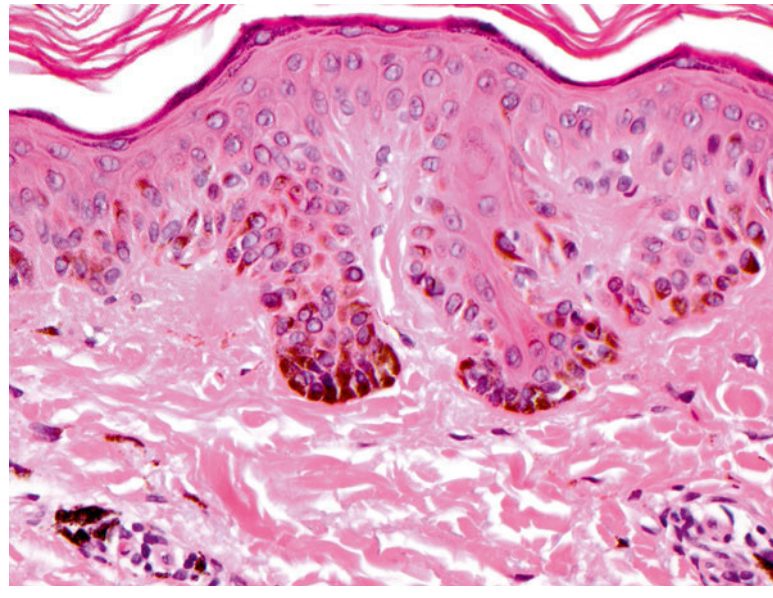

Fig. 1.2 Hyperpigmentation of basal keratinocytes with accentuation at the tips

Case 1B

Clinical History A 57-year-old male presented with a pigmented lesion on his left flank. The clinical impression was a psoralen and ultraviolet A (PUVA) lentigo versus seborrheic keratosis.

Microscopic Description In a punch biopsy of the skin, there are striking areas of pigmentation with focal pagetoid spread of melanocytes adjacent to mildly atypical keratinocytes with overlying parakeratosis (Fig. 1.3). High-power examination of the pigmented areas reveals very prominent melanocytes with hyperchromatic nuclei and markedly pigmented melanocytes scattered at the dermal-epidermal junction (Fig. 1.4). A mitotic figure of a melanocyte is noted in the basal region. In addition, there are pagetoid cells with similar morphology. The pigmentation, while most prominent in the basal layer, is also found in scattered keratinocytes in the spinous layer (Fig. 1.5). There are atypical keratinocytes present in both pigmented and nonpigmented areas so that the background change of the lesion is that of an actinic keratosis. The lesion is present at the margin.

Diagnosis PUVA lentigo associated with actinic keratosis

Comment Lentigines can develop even in sun-protected sites in patients treated with PUVA radiation (Basarab et al. 2000; Miller 1982). Often these lesions present as multiple, irregularly pigmented macules on the shoulders, upper back, buttocks, groin, and extremities. The sizes range from 3.0 to 8.0 mm (Rhodes et al. 1984).

This lesion exhibits an actinic keratosis which is a characteristic change associated with a PUVA lentigo. The characteristic features of PUVA lentigo are irregular hyperplasia of epidermis and atypical melanocytes with increased cytoplasm and fine melanin granules (Rhodes et al. 1984). Pagetoid spread of similar melanocytes is noted extending toward the granular layer of the epidermis. In addition to the pigmentation in the basal layer, scattered pigmented keratinocytes are present in the spinous layer. These changes are all associated with PUVA lentigo. We recommend a conservative excision of the lesion due to the melanocytic atypia and its presence at the margin.

Key Histologic Features

Psoralen and ultraviolet A (PUVA) lentigo (Figs. 1.3, 1.4, and 1.5)

- Irregular hyperplasia of the epidermis
- Atypical junctional melanocytes
- Pigmentation of basal keratinocytes and scattered pigmented keratinocytes in the spinous layer
- Background actinic keratosis

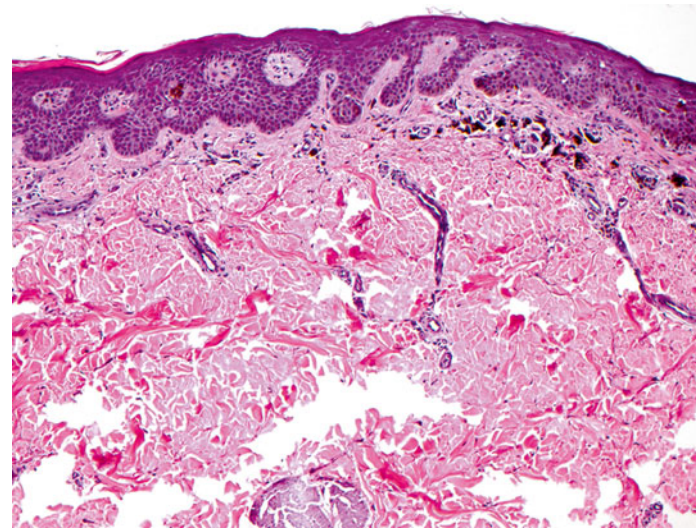

Fig. 1.3 Acanthotic epidermis with hyperpigmentation of keratinocytes

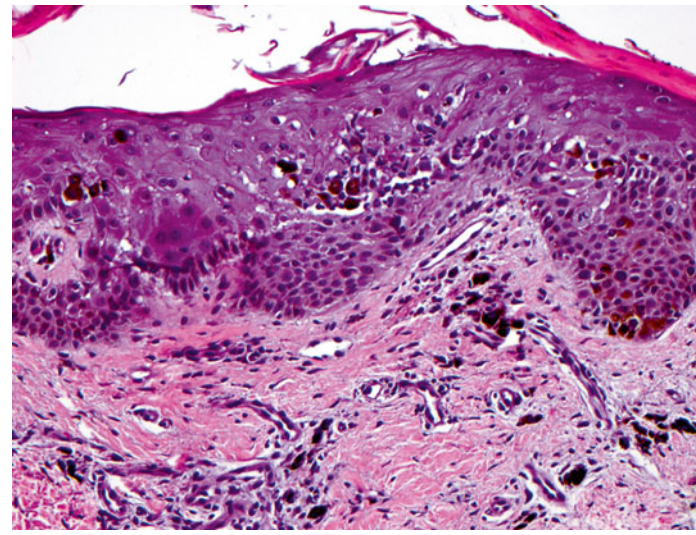

Fig. 1.4 Prominent melanocytes with hyperchromatic nuclei scattered within the epidermis

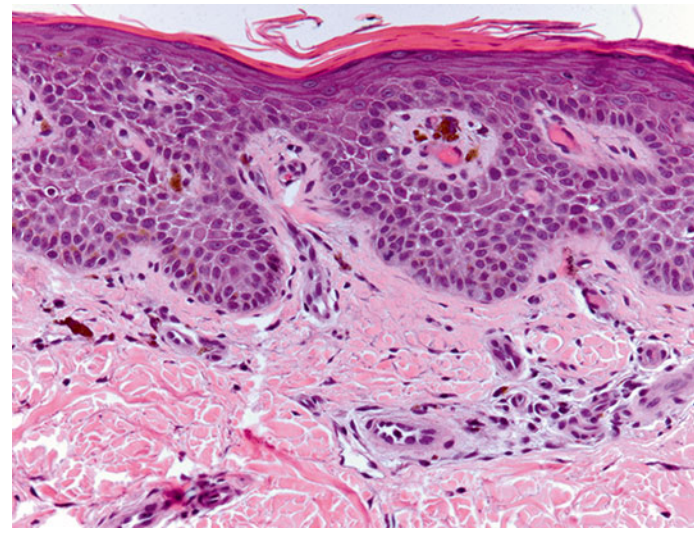

Fig. 1.5 Hyperpigmentation of keratinocytes and pigment incontinence

Case 1C

Clinical History A 56-year-old male with a lesion on his cheek

Microscopic Description A slightly hyperplastic epidermis is associated with markedly irregular rete ridge formation and prominent basal cell hyperplasia (Fig. 1.6). The rete ridge exhibits irregular shape with some in the normal pattern of rete with elongation and others with deformed rete ridges. The latter epidermal structures exhibit teardrop-like shape and half-moon shape and others resemble small foot processes with dense melanin pigment present throughout the rete but more exaggerated at the tip (Fig. 1.7). In some areas, the rete ridges fuse and show a complex and almost grid-like structure. There is focal hyperplasia of melanocytes with activated appearance (Fig. 1.7). The underlying dermis shows severe solar elastosis evidenced by prominent aggregates of amphophilic and amorphous materials containing scattered fibroblasts with cleft-like spaces (Fig. 1.7).

Diagnosis Solar lentigo

Comment Often multiple and considered to be a hallmark of aged skin, the solar lentigo clinically may resemble an atypical melanocytic lesion, but upon careful examination one can see that the reflection of the skin surface is dull due to hyperkeratosis (Monestier et al. 2006; Bastiaens et al. 2004). The lesion is usually tan in color with either dark flat-like or reticulated pattern. There is predilection for sun-exposed sites such as the face and the dorsa of the hands.

Histologically, the most impressive feature of the solar lentigo is the irregular shape of the rete ridges and the hyperpigmentation of the elongated retia with accentuation at the tips (Mehregan 1975; Montagna et al. 1980). In some cases, the lesion shows areas of fusion that resemble a seborrheic keratosis. In fact, in some of the lesions the changes are consistent with an early seborrheic keratosis. Intrinsically within this lesion there is no melanocytic hyperplasia; however, as seen in the current case, one may see some melanocytic hyperplasia in association with chronically sun-exposed areas. Rarely lentigo maligna may incidentally involve a solar lentigo. Activated melanocytes can be distinguished from atypical melanocytes based upon the uniform appearance of all involved cells. There are two basic patterns: (1) one is associated with a small, half-moon-shaped or oval hyperchromatic nuclei with the nuclei usually in the bottom of the small clear space; (2) the second pattern is associated with a small round nuclei with often tiny nucleoli surrounded by some residual amphophilic cytoplasm all resting at the base of the clear space in which the cells lie. We emphasize that the activated melanocytes all have similar size and appearance. They characteristically lie over dermal nevi, angiofibroma, recent scar, and even in chronically sun-damaged skin. The density of the cells is always greater at the center of the raised lesion and taper off at the periphery of the lesion.

In some instances distinction between solar lentigo and superficial pigmented actinic keratosis can be difficult (Klinker and Jonsson 1994). The stratum corneum is orthokeratotic in solar lentigo rather than parakeratotic as in a pigmented actinic keratosis. Some think that solar lentigo, pigmented seborrheic keratosis, and benign lichenoid keratosis are all within one spectrum of lesion.

Key Histologic Features

Solar lentigo (Figs. 1.6 and 1.7)

- Irregular and elongated epidermal rete ridges with hyperpigmentation
- Junctional hyperplasia of activated melanocytes
- Dermal solar elastosis

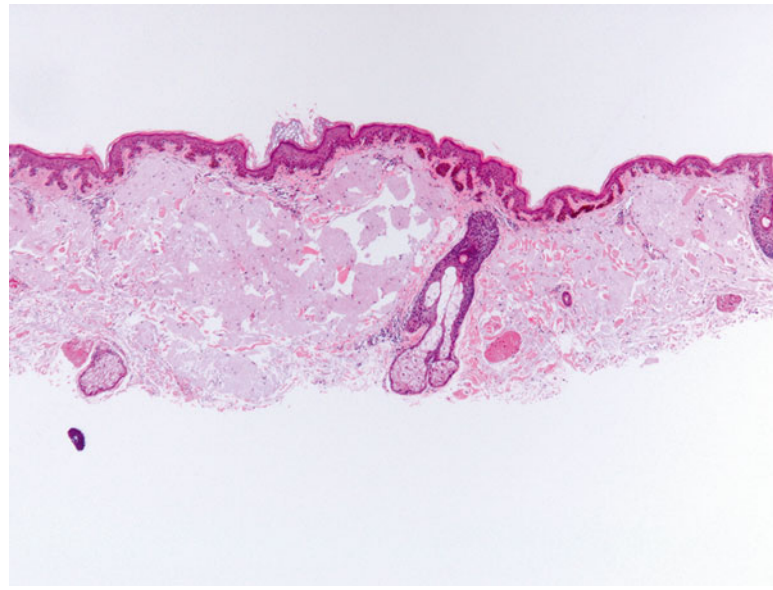

Fig. 1.6 Acanthotic epidermis with elongated and hyperpigmented rete ridges overlying an elastotic dermis

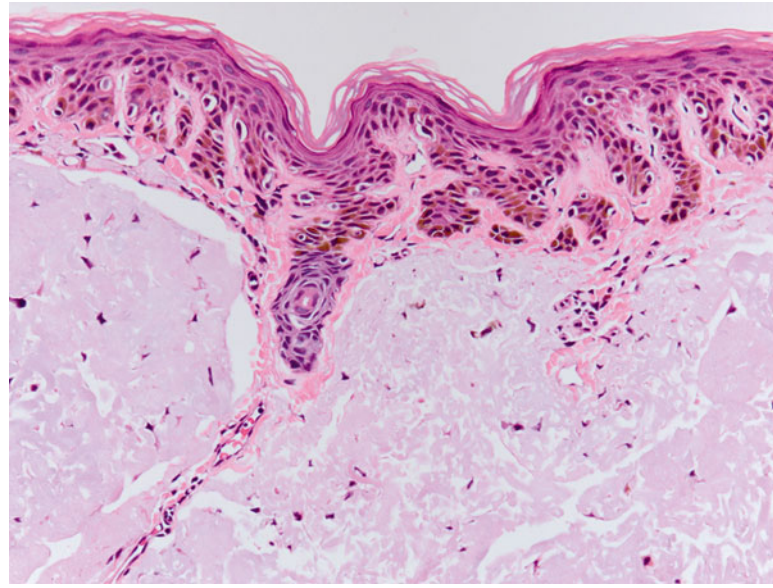

Fig. 1.7 Increased number of junctional and activated melanocytes

Case 1D

Clinical History An 18-year-old female with a pigmented macule on her right thigh. The lesion was thought to be a café au lait macule, and a biopsy was performed to rule out neurofibromatosis.

Microscopic Description In a shave biopsy of the skin, there is a slight increase in the number of melanocytes along the basilar region, all of which appear normal (Fig. 1.8). In the basilar keratinocytes there is prominent pigmentation scattered both in the cytoplasm and in a supranuclear cap (Fig. 1.9). Focally there is slight increase in the length of the rete ridges associated with focal benign melanocytic hyperplasia at the tips. Rare giant melanosomes are noted (Fig. 1.9, arrow). In the dermis there are rare melanophages.

Diagnosis Café au lait macule

Comment Café au lait macules can be isolated lesions or multiple in the settings of McCune-Albright's syndrome, tuberous sclerosis, neurofibromatosis, Bloom syndrome, Cowden's disease, Fanconi's anemia, ring chromosome syndromes, ataxia-telangiectasia, and Bannayan-Riley-Ruvalcaba syndrome (Riccardi 1981; Landau and Krafchik 1999; Khumalo et al. 2001). Idiopathic and single café au lait macule, as seen in this case, can be seen in 10–20 % of the normal population (Kopf et al. 1985). They are typically well circumscribed and homogeneously light to dark brown in color. This lesion shows the characteristics of a café au lait macule.

There is an increase of pigmentation in the basilar keratinocytes. This pigmentation is present both in the usual site that is in the supranuclear cap but also scattered in the cytoplasm of the basal keratinocytes. There are occasional keratinocytes in the layer just above the basal layer that show pigmentation. The melanocytic proliferation is normal overall with exception of some elongated rete ridges with melanocytes present at the tip. In contrast to lentigo simplex only occasional rete ridges are elongated. The majority of the epidermis appears normal except for the occasional fusion of the rete ridges. Quantitative studies have shown a mild increase in the number of melanocytes within the elongated rete ridges (Amer et al. 2001). Macromelanosomes, round pigmented cytoplasmic bodies, greater than 2 μm in diameter, are thought to derive from fusion of primary melanosomes or of secondary lysosomal residual bodies (Nakagawa et al. 1984). The diagnostic significance of macromelanosomes is unclear since they can be absent in some cases of neurofibromatosis and present in normal skin and other pigmented lesions (Silvers et al. 1974; Bhawan et al. 1976; Jimbow et al. 1973).

Key Histologic Features

Café au lait macule (Figs. 1.8 and 1.9)

- Increased melanin pigment in the basilar keratinocytes
- Rare giant melanosomes

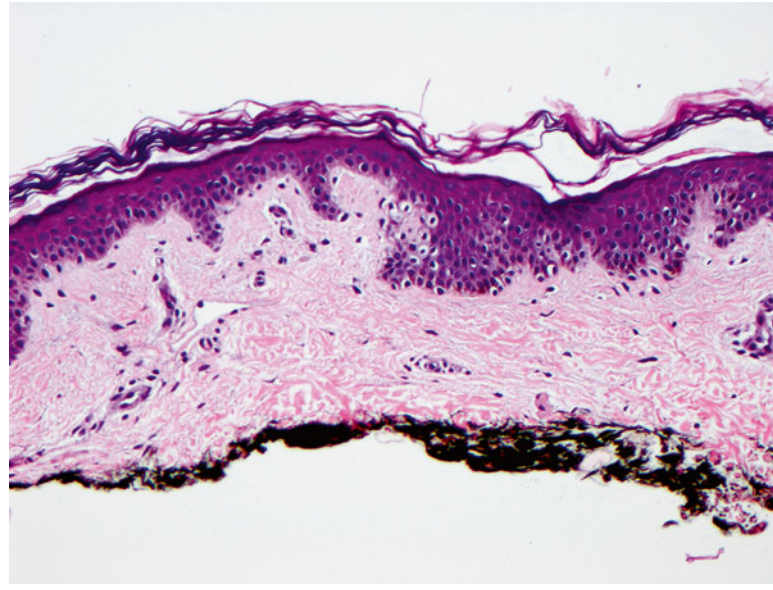

Fig. 1.8 Mild increase in the number of junctional melanocytes

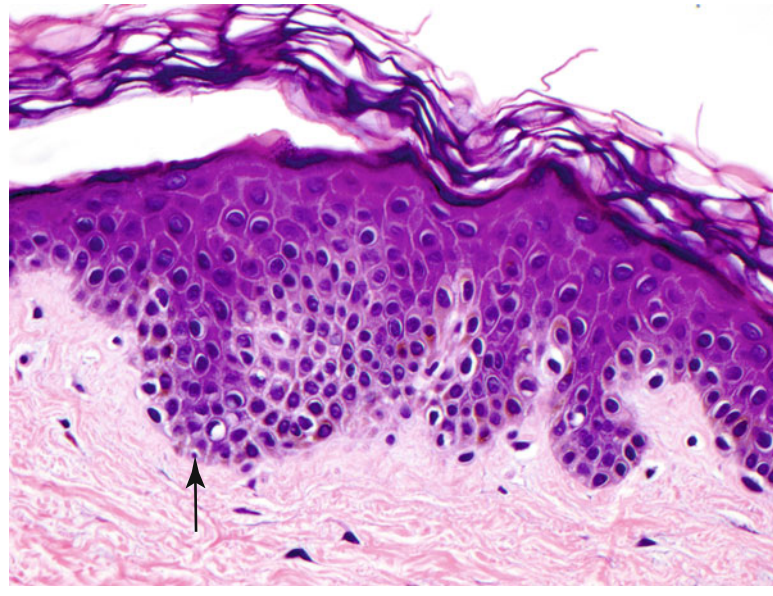

Fig. 1.9 Rare giant melanosome is noted

Case 1E

Clinical History A 45-year-old female with a lesion on her left thigh

Microscopic Description Slight epidermal hyperplasia is associated with the elongation of some rete ridges and fusion of others (Fig. 1.10). There is an increase in pigmentation especially at the tip of rete ridges. This pigmentation is confined to the basal keratinocytes at the tip of the rete ridges and multifocally at the areas of rete ridge fusion. Between the areas of prominent pigmentation, the density of the pigment is diminished. This change results in alternating areas of hypermelanosis. On high-power examination, the melanocytes are normal in size but contain increased melanin granules in their cytoplasm. Occasional portions of melanin-laden dendrites are seen in the spinous layer. Scattered melanophages are present throughout the papillary dermis.

Diagnosis Ink-spot lentigo

Comment This very prominent pigmentation results in a striking reticulated pattern that is seen clinically; thus the ink-spot lentigo is also known as reticulated melanotic macule of the trunk (Bolognia 1992). It usually presents as a solitary, reticulated, and black macule on the upper back in patients with fair skin, red or blond hair, and blue eyes. These lesions are often 4–6 mm in diameter, flat, black, and with spider leglike extensions and are surrounded by numerous sun-associated freckles.

The ink-spot lentigo presents a characteristic picture diagnosable often at low magnification because of the striking density of melanin pigment at the tip of the rete ridges and associated with usual elongation of these structures. There is no junctional nesting or confluent proliferation of melanocytes in ink-spot lentigo.

Key Histologic Features

Ink-spot lentigo (Fig. 1.10)

- Elongation of rete ridges with marked hyperpigmentation at the tips
- No junctional nesting or confluent proliferation of melanocytes

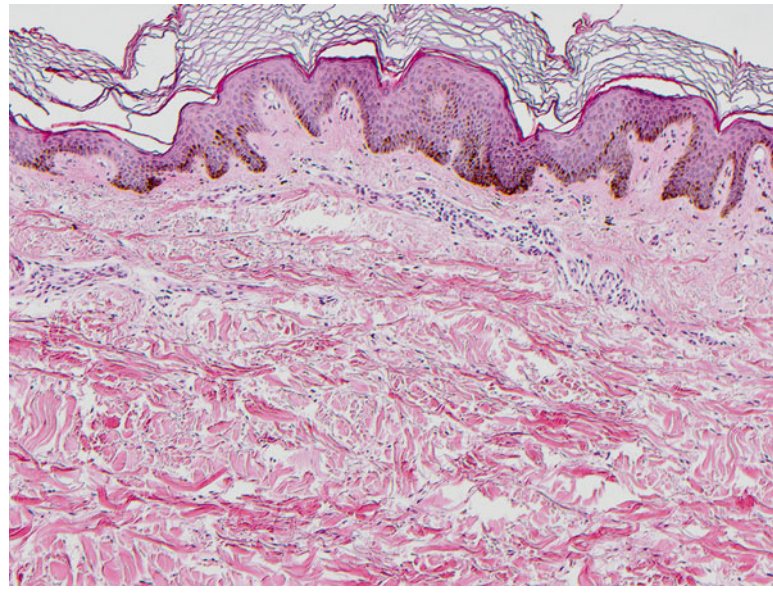

Fig. 1.10 Elongation of rete ridges with striking hyperpigmentation at the tip

Case 1F

Clinical History A 42-year-old male with a pigmented macule on his left lower lip

Microscopic Description The epithelium shows slight hyperplasia. In the basilar layer there are foci of quite prominent hypermelanosis associated invariably with increased melanin pigment within keratinocytes (Fig. 1.11). Rare hyperpigmented melanocytes with increased size are noted. Careful inspection of the lower epidermis shows an increase of pigment in keratinocytes in suprabasilar layer. One can identify dendrites filled with melanin granules coursing through the inter-keratinocytic space (Fig. 1.12). Rare giant melanosomes are noted. There are also dermal melanophages noted.

Diagnosis Basilar hypermelanosis consistent with lower labial macule/mucosal melanotic macule

Comment Occurring in up to 3 % of the population, labial melanotic macule of the lip can be multiple and previously was classified as lentigines (Gupta et al. 1997; Sexton and Maize 1987). Essentially this lesion is composed of hypermelanosis of both basilar and immediate adjacent spinous layer keratinocytes (Ho et al. 1993). The fact that one can observe dendrites coursing through the inter-keratinocytic space confirms the increase in melanin production. There are also melanophages present in the dermis. Thus the lesion is diagnosed based on hypermelanosis.

Key Histologic Features

Lower labial macule/mucosal melanotic macule (Figs. 1.11 and 1.12)

- Hypermelanosis of basilar and adjacent spinous layer keratinocytes
- Mild increase in the number of melanocytes often with dendritic forms

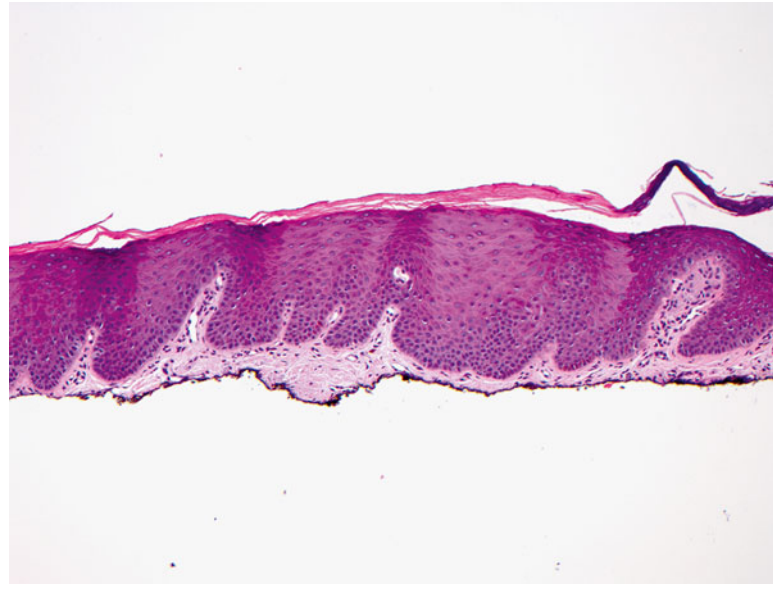

Fig. 1.11 Hyperpigmentation of basal keratinocytes

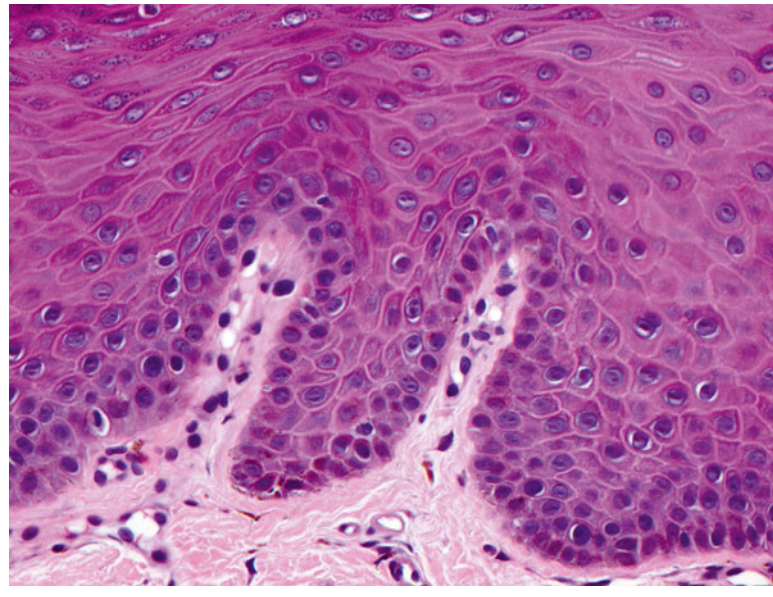

Fig. 1.12 Dendrites seen coursing through the inter-keratinocytic space

Case 1G

Clinical History A 53-year-old female with a pigmented lesion on her vulva

Microscopic Description A uniform pigmentation of the basilar layer is associated with a normal pattern of the rete ridges (Fig. 1.13). Higher-power examination reveals that the pigmentation is limited to the basilar keratinocytes with exaggeration of the supranuclear position of the melanin granules (Fig. 1.14). In addition, small pigmented dendrites can be visualized very focally even up in the spinous layer (Fig. 1.14). The melanocytes are normal in number and distribution. In the dermis, scattered elongated melanophages are present and oriented parallel to the long axis. There is no dermal inflammation.

Diagnosis Vulvar melanosis

Comment This lesion represents the classic presentation of vulvar melanosis (Rudolph 1990). The genital lentigines are often tan to dark brown and macules up to 15 mm are seen on the glans penis, corona, sulcus, and penile shaft in men and any genital mucosa in women. Besides malignant melanoma, the clinical differential diagnosis includes pigmented Bowen's disease, bowenoid papulosis, and pigmented extramammary Paget disease (Barnhill et al. 1990; Kanj et al. 1992; Chibba et al. 2000).

The changes are also seen in penile melanosis including prominent and uniform pigmentation of the basilar keratinocytes with no evidence of melanocytic hyperplasia (Revuz and Clerici 1989). Unlike the vulvar lentigo, there is no elongation of the rete ridges (Jih et al. 1999). The melanocytes are normal in their size and distribution but are laden with melanin granules. Because of the dense melanin granules, dendritic processes of the melanocytes can be focally seen insinuated between the keratinocytes even in the superficial squamous cell layer. There are characteristically no junctional melanocytic nests or pagetoid spread of melanocytes found in this lesion. If there were cytologic atypia, the lesion would be classified as an atypical genital melanocytic hyperplasia or atypical genital melanosis, implying a premalignant potential (Kerley et al. 1991).

Key Histologic Features

Vulvar melanosis (Figs. 1.13 and 1.14)

- Prominent and uniform pigmentation of the basilar keratinocytes with no evidence of melanocytic hyperplasia

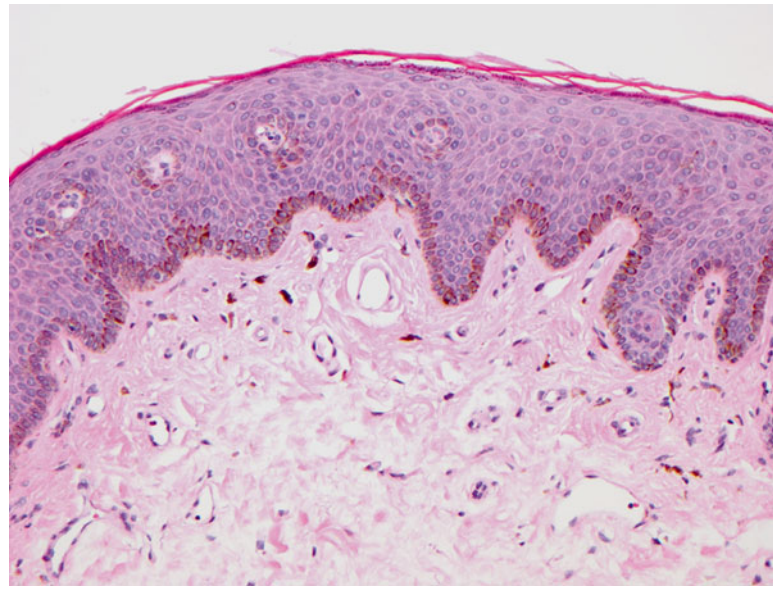

Fig. 1.13 Uniform hyperpigmentation of basal keratinocytes

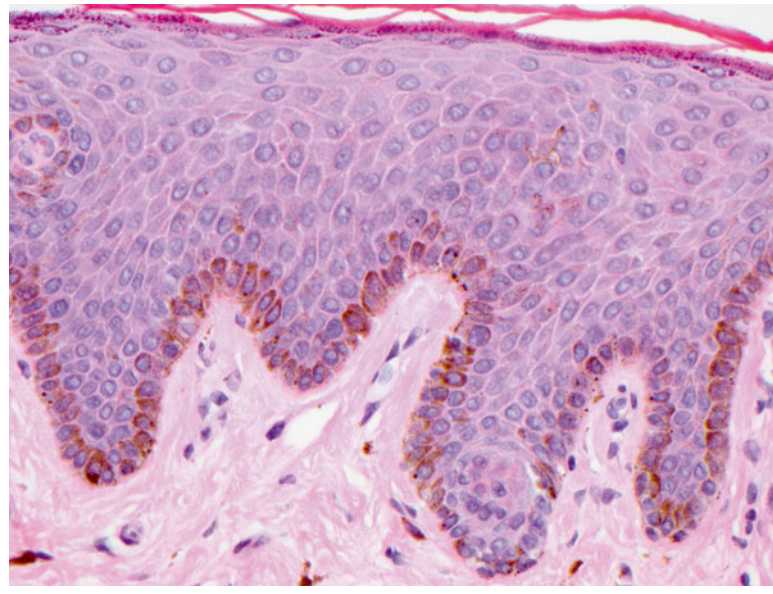

Fig. 1.14 Small pigmented dendrites can be seen

Case 1H

Clinical History A 41-year-old female with multiple pigmented lesions on her left groin

Microscopic Description A prominent hyperplasia composed principally of melanocytes scattered randomly as single cells and in clusters associated with variable pigmentation of adjacent keratinocytes (Fig. 1.15). The keratinocytic component is associated with elongated rete ridges with slightly irregular shape. There is definitely increased pigment in the elongated retiform structures. Fusion of the rete ridges is focally present (Fig. 1.16). The papillary dermis is slightly thickened and is associated with scattered melanophages and focally increased vascularity (Fig. 1.16). No lamellation of collagen or eosinophilic fibrosis is noted.

Diagnosis Nevus spilus

Comment Speckled lentiginous nevus or nevus spilus is composed of small dark hyperpigmented speckles, superimposed on a tan-brown macular background (Stewart et al. 1978). Though it can be present at birth, the lesion often develops in childhood (Cohen et al. 1970). Nevus spilus may be a cutaneous manifestation of a phacomatosis syndrome (Du et al. 1998). This lesion exhibits the characteristic features of nevus spilus. Whereas the background-pigmented area resembles a lentigo histologically, features of a lentiginous nevus and even small compound nevus are seen within the speckled area (Stewart et al. 1978). In some cases, a congenital nevus, dysplastic nevus, or rarely agminated Spitz nevi may be seen arising in association with nevus spilus (Schaffer et al. 2001; Hofmann-Wellenhof et al. 1994; Aloi et al. 1995; Betti et al. 1997). The histology of the macular area is indistinguishable from those of lentigo. There is a prominence of slightly irregular thin elongated rete ridges that show fusion in some areas. The melanocytic hyperplasia is characteristically variable showing single cells in some areas and almost coalescence in other areas. There are always small nests of cells randomly scattered at the tips of the rete ridges. The epidermal pigmentation is also variable and prominent in the elongated rete ridges. In all cases of nevus spilus, there is thickening of papillary dermal collagen by fine fibrosis without the patterning that one sees in dysplastic nevi. In this thickened zone, there are scattered melanophages and increased vascularity. Atypia of the intraepidermal melanocytes is uncommon (Rhodes and Mihm 1990). Giant melanosomes can be seen in nevus spilus (Takahashi 1976).

Key Histologic Features

Nevus spilus (Figs. 1.15 and 1.16)

- Junctional melanocytic hyperplasia associated with variable pigmentation of epidermal keratinocytes
- Elongation of rete ridges
- Thickening of papillary dermal collagen