Melanocytic lesions: not in the textbooks

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Abstract

The histological diagnosis of melanocytic lesions is probably one of the more difficult areas in histopathology because of the wide spectrum of melanocytic entities and all their subtle variations. Additionally, it is an area with significant medicolegal implications. While there is a vast literature in relation to melanocytic lesions, some histopathological features recognized through the personal experience of specialists are not described in the principal texts. This article reviews these lesser known features of the different categories of melanocytic lesion.

Keywords atypical naevi; melanoma and variants; metastatic melanoma; spitz naevi

Introduction

Specialization in pathology, despite some drawbacks, has brought definite advantages, particularly for the individual pathologist, who gains more intense exposure to a larger number of specific histopathology specimens over a shorter period of time. Also, by working in tertiary referral centres, a significant number of more complex cases are seen. This diagnostic exposure allows some of the less common histopathological patterns to emerge relatively more frequently.

In addition, the attendance at specialist meetings, particularly listening to the comments of major international speakers and their responses to specific questions from an already specialist audience, assists the acquisition of knowledge that may ordinarily be obtained over a prolonged working lifetime.

This article summarizes some of the invaluable tips on the diagnosis of unusual melanocytic lesions, gained through personal experience or chanced upon by thoughtful discussions at such meetings. While most topics in this article are not covered in the standard textbooks, some are found in specialized textbooks, usually as 'small print'.

Benign naevi

Junctional naevus

In contrast to the accepted text, junctional naevi (with the exception of Spitz, pigmented spindle cell and atypical naevi) are incredibly rare in biopsy practice and almost never occur in adults. Any melanocytic lesion on the head, neck or acral sites, and which is purely junctional, should be regarded with suspicion. This is particularly so if there is a predominance of lentiginous growth, which can be highlighted with immunohistochemistry, particularly Melan-A.[1] For junctional lesions at other sites, there should be a very low threshold for regarding these lesions as suspicious of atypical naevi, pigmented lentiginous naevi (see below) and even melanoma in situ.

Facial compound naevus

Compound naevi on the face can exhibit a (benign) atypical junctional component for a number of reasons. First, they may be traumatized by shaving, resulting in a patchy lentiginous junctional component. Second, with chronic UV exposure, large single, bizarre-looking cells or 'sunburn cells' can be seen scattered along the basal layer of the epidermis.[2] The number of melanocytes may be slightly increased but, in contrast to lentigo maligna, the atypical cells are well spaced and do not form lentiginous runs or extend beyond the basal layer compartment of the epidermis. A similar change is described in patients undergoing PUVA therapy.[3] The clue to the diagnosis of these phenomena is that the dermal component looks entirely benign. Third, 'ancient' changes can be found in intradermal naevi, particularly on the face of the elderly; although hyperchromatic and pleomorphic cells are present, the clues to the benign nature of the lesion include a predominance of banal naevoid cells, lack of mitotic activity and associated degenerative changes such as fibrosis, oedema, haemorrhage and even vascular changes such as venous thrombosis (Figure 1).[4]

Special site naevus

Naevi occurring in certain anatomical sites can show 'appropriate' atypical histological features attributable to the particular quality of the skin at that site. The best documented special sites are acral and genital skin.[5–8] More recently recognized special sites include the flexures (elbows, knees), axillae, umbilicus, inguinal region, pubis, perianal region, scrotum, breast and ears.[9–12] It is likely that the list will grow. When all these special site naevi are combined with pigmented lentiginous naevi, it is probable that

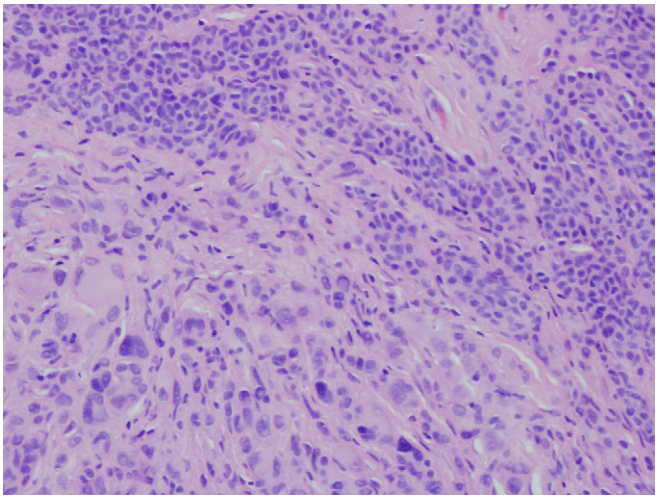

Figure 1 Ancient naevus.

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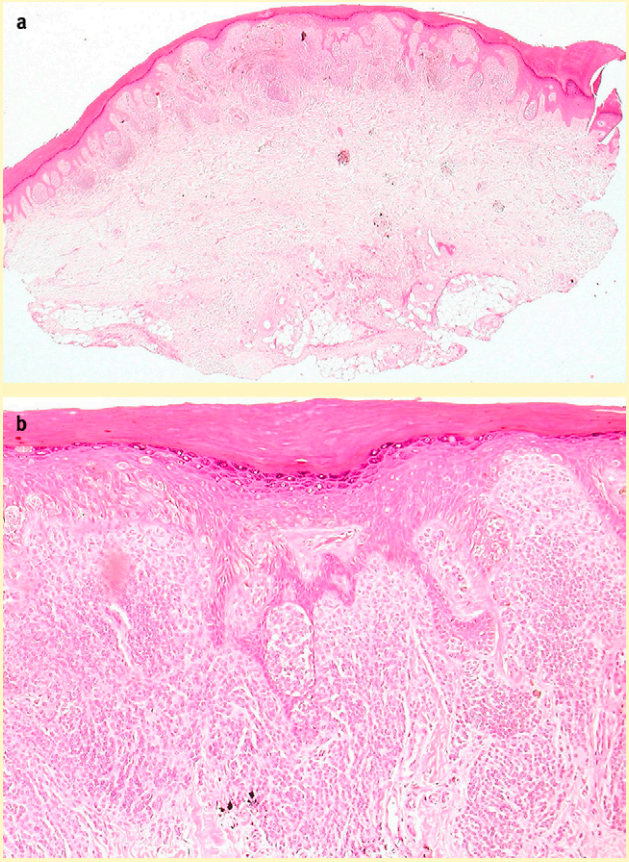
they will account for a significant proportion of lesions previously called atypical or 'dysplastic naevi'.

The atypia in these special site naevi is usually architectural (Figure 2), with a mixture of large irregular nests interspersed with a patchy lentiginous growth. Pagetoid melanocytosis may be present, usually in the form of transepidermal elimination of melanocytic nests. The architectural atypia seen in these special site naevi may be attributable to the way the specimen has been sectioned at the trimming bench, as significantly less atypia has been documented in acral naevi that have been sectioned perpendicular to the dermal glyphics.[13] While this may be relatively easy to demonstrate in acral lesions where the skin creases are more obvious to the naked eye, it is likely that sectioning will also affect the degree of architectural atypia at other anatomical sites.

Despite the fact that these special sites are now recognized, there remains the problem of how much histological atypia can be accepted as, like for all other body sites, melanoma can and does occur at these sites. Only by taking into account clinical factors (patient age, size of lesion, clinical impression) together with the histological features can a balanced opinion be achieved. Older age, large lesion and clinical suspicion should raise awareness. At these special sites there should be no more than mild cytological atypia and moderate architectural atypia. A dense lymphocytic infiltrate is also a suspicious feature.[6] Any lesion with severe architectural and/or severe cytological atypia at these or any site should be regarded as melanoma.

Finally, with specific regard to acral naevi, there is the additional problem of what constitutes an acral site. Some studies include palms, soles and dorsum of the hand and foot. We believe that the palms, soles and dorsum of the foot should constitute 'acral' sites, but not the dorsum of the hand for which there is the additional complicating factor of UV exposure. Skin around the ankle can also exhibit the acral special site phenomenon.



Acral naevus. **a** Low power (H&E) **b** high power (H&E).

Figure 2

Special site Spitz naevus

Spitz naevi can occur on acral and almost certainly on other special sites, and two unusual factors must be taken into account when interpreting these lesions – 'special site atypia' and 'special type of melanocytic lesion'. Spitz naevi even at non-special sites can look worrisome initially histologically. The most important approach to these lesions is to be aware of the entity and to use common sense. Although the histological features may appear very florid, the same criteria for Spitz lesions elsewhere should be used, namely restriction to a relatively young age, small size (≤6 mm), abundant nests rather than lentiginous growth pattern, and a uniformity to the lesion (i.e. each field looks the same with similar cytology and activity within the lesion) (Figure 3). There may also be clefts and kamino bodies.[14]

Atypical naevi

Pigmented lentiginous naevus with atypia

Pigmented lentiginous naevus with atypia (PLNA), also called 'lentiginous dysplastic naevus of the elderly' (LDNE) and 'naevoid lentigo maligna', is a specific clinico-pathological entity that occurs preferentially on the trunk (back) in men and leg in women.[15,16] Although initially thought to occur only in the older population (> 60 years), we regularly find these lesions in individuals as young as 30 years. Also, although thought to be uncommon, once the pattern recognition is established, they are relatively common. Clinically, they are flat macular lesions which are usually submitted with a clinical history of atypical naevus/early melanoma. Histologically, they have striking elongation of the rete pegs and increased basal layer melanin pigmentation, which are features noted at scanning power. Additionally, there is a junctional melanocytic component, principally lentiginous, which usually shows varying degrees of architectural atypia, ranging from minimal to severe atypia (Figure 4). Melan-A with the red or purple counterstain (VIP substrate – very intense purple – for peroxidase) should be used to exhibit the degree of architectural atypia. This stain allows differentiation from the heavily pigmented keratinocytes. Alternatively, we have found that conventional black–brown chromagen immunocytochemistry followed by melanin bleach eliminates background melanin pigmentation.

These lesions are considered to be the true 'dysplastic' naevi and important precursors to melanoma, as melanoma can be seen to arise in association with these lesions. Weedon states that this category of lesions has previously, and indeed still are, been classified as dysplastic naevi, atypical melanocytic hyperplasia, atypical melanocytic proliferation, lentiginous melanocytic proliferation or premalignant melanosis.[17] In one study of melanoma in situ, 28 of