Dermatoscopy Turns Histopathologist’s Attention to the Suspicious Area in Melanocytic Lesions

Juergen Bauer, MD; Gisela Metzler, MD; Gernot Rassner, MD; Claus Garbe, MD; Andreas Blum, MD

Background: Histopathologically, the diagnosis of nevus-associated melanoma or melanoma close to a common nevus can be missed if the specimen is cut in a nonrepresentative area or if the section shows only the associated common nevus.

Objective: To find out whether dermatoscopy of suspicious areas within a nevus can improve the histological diagnosis of malignant melanocytic lesions of the skin.

Materials: The study was based on dermatoscopic images of more than 2000 benign and 115 malignant pigmented lesions and a collection of corresponding histopathologic slides.

Methods: The dermatoscopic images and the corresponding histopathologic diagnoses were compared. In case of differences, the histopathologic findings were reevaluated and compared with the dermatoscopic findings.

Results: Three cases were identified in which melanoma could have been histopathologically missed as a result of improper sectioning. After the dermatoscopic findings were evaluated, the specimens were reembedded and further sections were obtained. Finally, nevus-associated melanoma or melanoma close to a common nevus was diagnosed.

Conclusions: Specific dermatoscopic patterns of malignancy can be found in highly suspicious areas, eg, broadened networks, radial streaming, pseudopods, or dots located at the periphery. The dermatoscopic-histopathologic correlation can improve the diagnosis of melanoma. Therefore, the clinician should point to the most suspicious area with a drawing or image, and the suspected diagnosis of melanoma and the history of the lesion should be also mentioned.

Arch Dermatol. 2001;137:1338-1340

DERMATOSCOPY is an excellent tool for diagnostic classification of melanocytic and nonmelanocytic lesions, especially for early diagnosis of malignant melanoma.1-5 The “gold standard” for final diagnosis is histopathologic examination.6,7 However, the histopathologist cannot see the third dimension of the lesion, ie, the horizontal spread, which is evident on dermatoscopic examination. Therefore, melanoma could be overlooked if the section is nonrepresentative and if the clinician does not clearly indicate that melanoma is suspected. We report 3 cases in which dermatoscopic findings guided the histopathologist to the diagnosis of malignant melanoma.

REPORT OF CASES

CASE 1

A 21-year-old woman presented with a newly developed dark pigmentation within a preexisting nevus at the belly. On dermatoscopy, the light-brown lesion showed a regular globular pattern with a small area in the lower part, where bizarre atypical streaks were detected. According to the pattern analysis,1,2 an initial atypical melanoma developing on a preexisting nevus was suspected, and the lesion was excised. If the lesion was histologically transsected along line I as shown in the Figure, A, histopathologic examination revealed a Clark nevus (Figure, B). If the lesion was transsected along line II as shown in the Figure, A, nevus-associated melanoma in situ was diagnosed (Figure, C).

CASE 2

An asymmetrical pigmented lesion of different colors was detected in a 29-year-old woman during clinical examination. Dermatoscopy showed a melanocytic lesion with 2 different parts: in the upper part, structureless light-brown areas and a regular pigmented network were seen;
in the lower part, a prominent irregular network with black dots at the periphery was visible. The dermoscopic diagnosis of superficial spreading melanoma at the periphery of a nevus was made according to the pattern analysis, and the lesion was excised. Histopathologic evaluation of the section along line I as shown in the Figure, D, led to a diagnosis of Clark nevus (Figure, E). In contrast, when the lesion was sectioned along line II as shown in the Figure, D, histopathologic examination revealed a superficial spreading melanoma (level of invasion II, Breslow tumor thickness 0.5 mm) (Figure, F).

CASE 3

A 26-year-old woman reported the development of a dark area next to a long existing pigmented lesion on the breast. On dermatoscopy, a light-brown, homogeneous, melanocytic lesion with a regular, fine network in the center was seen. In the upper part, next to the lesion, there was another, asymmetrical, structureless, melanocytic lesion with black dots and irregular streaks at the periphery; according to the pattern analysis, melanoma was suspected in the upper part. Both lesions were excised during 1 biopsy. If the specimen was transsected along line I as shown in the Figure, G, a compound nevus was diagnosed (Figure, H), but if the specimen was sectioned along line II as shown in the Figure, G, a melanoma in situ and a neighboring compound nevus were diagnosed (Figure, I).

During histopathologic examination, excised lesions are normally cut vertical to their longest axis and embedded on the intersections. Sections from these specimens are thought to be representative. However, this fact is only valid for exhaustive step sectioning of the complete specimen. Yet, step sectioning is not routinely done for all pigmented lesions in most histopathologic laboratories unless melanoma is suspected. Therefore, without a correct clinical differential diagnosis, histopathologists get few vertical sections of the specimen, which represent a small sample of the entire lesion. In contrast, dermatoscopy provides the clinician with a view of the third dimension, ie, the horizontal spread, information not available to the histopathologist. With this horizontal dermatoscopic perspective, decisive information about the patterns can be obtained, and based on this information, areas of possible malignancy can be identified. As demonstrated by our cases, in nevus-associated melanoma (cases 1 and 2) or melanoma close to a common nevus (case 3) within 1 biopsy specimen, indication of the suspicious area can help the histopathologist to define the representative area for sectioning. Moreover, in cases in which melanoma is difficult to diagnose (eg, spitzoid melanoma and nevoid melanoma), the attention of the histopathologist can be directed toward the area of highest diagnostic relevance. Using computer-directed dermatoscopy, an objective and a detailed follow-up of suspicious lesions, eg, in atypical mole syndrome, can be ob-

A, D, and G, Dermatoscopic images of cases 1 through 3. Sectioning along line I reveals a nevus (B, E, and H). After resectioning along line II, malignant melanoma was diagnosed (C, F, and I). B, C, E, F, H, and I, hematoxylin-eosin, original magnification ×13, bars=100 µm.
tained. This fourth dimension—time—can also help to detect melanoma early.

In our department, 2 cases of histopathologic misdiagnoses resulting from a lack of clinical information and improper sectioning were detected during the last 2 years. These cases were identified retrospectively by comparing histopathologic and dermatoscopic diagnoses. Case 2 in this article is one of the 2 misdiagnosed melanomas. Cases 1 and 3 are typical case scenarios in which histopathologic misdiagnoses can occur. In these cases, dermatoscopic diagnoses were communicated to the histopathologist and helped in the cutting of representative sections. Therefore, the clinician should point to the most suspicious area with a drawing or image (eg, print or teledermatoscopy9), in combination with a sign like a thread according to the Mohs surgery or an ink spot at the specimen. When a suspicious lesion and a benign lesion are included in the same tissue specimen, as in case 3, either the specimen should be divided into 2 pieces or the dermatopathologist should be alerted to the presence of 2 lesions within 1 excision. The suspected diagnosis of melanoma and the development of the lesion should be also mentioned. Based on this procedure, the histopathologist can initially obtain a diagnostic section, thereby avoiding time-consuming and expensive step sectioning and substantially reducing the risk of missing the correct diagnosis. In case of an inconsistency between the dermatoscopic and histopathologic diagnoses, the specimen should be reevaluated for the safety of the patient.

Accepted for publication June 14, 2001.

Corresponding author and reprints: Andreas Blum, MD, Department of Dermatology, University of Tuebingen, Liebermeisterstrasse 25, 72076 Tuebingen, Germany (e-mail: a.blum@derma.de).

REFERENCES