ture research would benefit from detailed measurement of media exposure to determine outlets that have the most influence on self-objectification and, ultimately, indoor tanning behavior. Future work should examine how these variables are related to other predictors of tanning. These preliminary findings suggest that cultural and media-driven body objectification might motivate young women to engage in indoor tanning behaviors.

Jerod Stapleton, BS
Rob Turrisi, PhD
Alyssa Todaro, BS
June K. Robinson, MD

Correspondence: Mr Stapleton, The Pennsylvania State University, 204 E Calder Way, Ste 208, State College, PA 16803 (jerod@psu.edu).

Author Contributions: All authors had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Stapleton and Robinson. Acquisition of data: Stapleton. Analysis and interpretation of data: Stapleton, Turrisi, and Todaro. Drafting of the manuscript: Stapleton and Todaro. Critical revision of the manuscript for important intellectual content: Stapleton, Turrisi, and Robinson. Statistical analysis: Stapleton and Turrisi. Study supervision: Robinson.

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Transillumination as a Means to Differentiate Melanocytic Lesions Based on Their Vascularity

Angiogenesis is an important facet of tumorigenesis. One method to characterize this process in pigmented lesions is to assess architectural patterns of vascular structures with tools such as dermoscopy and reflectance confocal microscopy. Dermoscopic studies have shown distinct vascular patterns in melanoma vs benign pigmented lesions. In addition, investigators have measured the number of blood vessels using lectin agglutinin I to label microvessels in excised lesions and have shown that melanomas contain more blood vessels than dysplastic nevi (DN), and DN have more blood vessels than other benign nevi. These data suggest that characterizing angiogenesis within a lesion may potentially help distinguish between different melanocytic lesions. Studies using laser Doppler perfusion imaging have already shown that it is possible to noninvasively categorize lesions by measuring velocity of blood flow.

In this pilot study, we investigated the use of a novel instrument, the Nevoscope (TransLite, Sugar Land, Texas), which combines side-transillumination (TL) to measure blood volume with cross-polarization (XP) for superficial imaging, to differentiate melanocytic lesions based on vascularity. The Nevoscope was used to image the lesions. Punch biopsy specimens of suspect lesions were obtained, and the biopsy specimens were submitted for histopathologic diagnosis.

Nevoscope Imaging. This device uses XP and TL to create dermoscopic and blood-volume images, respectively. Side-transillumination directs light into the skin at a 45° angle from the periphery of the lesion. This light, focused under the skin, behaves as a virtual light source and uniformly transilluminates a small area of the skin within the circular area defined by the fiberoptic ring light. All chromophores, including melanin, oxyhemoglobin, and deoxyhemoglobin, are involved. Thus, TL imaging provides information on blood volume and melanin content. Deoxygenated blood, specifically, absorbs light wavelengths between 580 nm and 650 nm and appears dark red on transillumination. On the other hand, XP images are formed via surface reflection and provide information on melanin content.

Image Acquisition and Lesion Classification. Side-transillumination and XP images were obtained prior to biopsy. An automated procedure for accurate boundary detection was used. Next, the area within the boundary was quantified from the TL and XP images. Fifty melanocytic lesions were used in the analysis; they included 6 congenital nevi (CN), 5 intradermal nevi, 18 DN with mild atypia, 15 DN with moderate atypia, 2 DN with severe atypia, and 4 malignant melanomas (MMs). Junctional melanocytic nevi with atypia and DN with congenital features were grouped into the DN category. Criteria for characterizing DN based on cytologic atypia are discussed elsewhere.

Statistical Analysis. Descriptive statistics were used to describe the study lesions. A ratio (TL/XP = melanin...
area + blood volume area/melanin area) of the XP and TL areas was computed for each lesion; this value was taken as an indirect measure of the lesion’s vascularity and was used as the outcome measurement. It was hypothesized that this ratio would equal 1 for benign lesions and exceed 1 for more vascular lesions such as MMs and DN.

Mean TL/XP ratios were calculated for each lesion category and compared between categories using the t test. Linear regression was used to assess trends in TL/XP ratios across lesion categories; this analysis was performed with and without CN. The reason for excluding CN is that they are inherently more vascular than other melanocytic lesions.1,9

Results. Figure 1 shows Nevoscope images of a moderately dysplastic nevus. The TL image demonstrates less pigmentation and less contrast than the XP image. However, the TL image appears larger owing to the vascular component at the periphery.

The mean TL/XP ratios and SDs for the 50 analyzed images are as follows: 1.24 (0.26) for CN; 0.98 (0.22) for intradermal nevi; 1.13 (0.21) for DN with mild atypia; 1.21 (0.14) for DN with moderate atypia; 1.24 (0.07) for DN with severe atypia; and 1.25 (0.21) for MMs. Figure 2 demonstrates an increase in lesion vascularity from benign intradermal nevi to MMs. This trend is significant when CN are excluded (P = .02).

Comment. In this pilot study we present a novel device, the Nevoscope, that combines 2 imaging techniques, XP and TL, to assess vascularity of pigmented lesions. We have demonstrated a trend in increasing blood volume from mild DN to moderate DN to severe DN to MM. As expected, the highest TL/XP ratio was seen in melanoma, supporting previous studies that have shown the impact of neoangiogenesis in cutaneous neoplastic processes.10 In addition, these data support laser Doppler perfusion imaging studies15 as well as pathologic reports3 describing increased blood velocity and blood microvessel count, respectively, in the different types of melanocytic tumors.

Interestingly, the TL/XP ratio increased as a function of atypia in DN. This finding raises a question of the significance of neoangiogenesis in the evolution of DN. Additional studies are warranted to investigate the feasibility of using this instrument as an aid to diagnose melanocytic neoplasms and to further characterize neoangiogenesis in DN.

Vitaly Terushkin, BS
Stephen W. Dusza, DrPH
Nizar A. Mullani, BS
Madeleine Duvic, MD
George Zouridakis, PhD
Martin Weinstock, MD, PhD
Rhett Duggie, MD
Victor G. Prieto, MD, PhD
Atam Dhawan, PhD
Claire Terry, RTT
Rakhshandra Talpur, MD
Ashfaq A. Marghoob, MD

Correspondence: Dr Marghoob, Memorial Sloan-Kettering Cancer Center, 160 E 53rd St, New York, NY 10022 (marghooa@mskcc.org).

Author Contributions: Mr Mullani and Dr Duvic had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Mullani, Prieto, and Dhawan. Acquisition of data: Mullani, Duvic, Weinstock, Duggie, Terry, and Talpur. Analysis and interpretation of data: Terushkin, Dusza, Mullani, Zouridakis, Weinstock, Duggie, Prieto, Dhawan, and Marghoob. Drafting of the manuscript: Terushkin, Dusza, Mullani, Duggie, Prieto, and Talpur. Critical revision of the manuscript for important intellectual content: Terushkin, Dusza, Mullani, Duvic, Zouridakis, Weinstock, Duggie, Prieto, Dhawan, Terry, and Marghoob. Statistical analysis: Dusza and Mullani. Obtained funding: Mullani and Duvic. Administrative, technical, and material support: Mullani, Duvic, Weinstock, Dhawan, and Terry. Study supervision: Dusza, Mullani, Duvic, and Marghoob.

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Scalp Dermatomyositis Revisited

A novel study by Kasteler and Callen1 published in 1994 defined scalp involvement as a common and symptomatic (ie, pruritic) manifestation of dermatomyositis (DM). They defined this involvement as “diffuse, scaly dermatosis with erythema (Figure), atrophy, and often nonscarring alopecia”1(p1046) present in 82% of their patients with DM. Because therapy to control the often debilitating scalp symptoms of DM is lacking, we conducted a retrospective study to compare the DM cases reported by Kasteler and Callen1 with our own current population to determine similarities and differences and to evaluate whether any of the systemic therapeutic ladders used to treat DM2,3 were optimal for treating symptomatic scalp DM.

Methods. After approval from the institutional review board, we evaluated our patients’ medical charts from 2003 through 2008 that included an International Classification of Diseases, Ninth Revision diagnosis for DM: 24 cases were identified. Diagnosis of DM and scalp DM were based on clinicopathologic correlation by the same observer (J.C.E.). Patient data collected included age, sex, association with alopecia and/or malignant neoplasm, systemic treatment, and clinical outcome. Fifteen patients were noted to have scalp DM, 13 of whom met criteria for treatment analysis (ie, at least 4-month follow-up). We used the Fisher exact test to analyze treatment responsiveness, the clinical end points being no relief, partial relief, or complete relief of scalp symptoms from DM.

Results. A comparison of the characteristics of our DM cases with those of the 1994 study1 is listed in Table 1. Fifteen of our 24 DM cases included scalp involvement, with one-third (n=5) exhibiting associated nonscarring hair loss. All 15 of these patients were women (mean age, 55.3 years), and only 1 had a systemic malignant neoplasm, while 5 had associated myopathy (33%). All 13 patients who met the study criteria received high-potency topical steroid treatment, and only 1 had a partial response. In 11 of the remaining cases, treatment was advanced to the oral immunosuppressive agents listed in Table 2. We observed that 4 of the 11 patients undergoing systemic therapy showed improved cutaneous symptoms but without scalp improvement.

Table 1. Characterization of Patients With Dermatomyositis

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Kasteler and Callen, 1994</th>
<th>Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalp involvement</td>
<td>14/17 (82)</td>
<td>15/24 (63)</td>
</tr>
<tr>
<td>Alopecia</td>
<td>6/14 (43)</td>
<td>5/15 (33)</td>
</tr>
<tr>
<td>Age, mean, y</td>
<td>41.6</td>
<td>55.3</td>
</tr>
<tr>
<td>Associated myopathy</td>
<td>14/14 (100)</td>
<td>15/15 (100)</td>
</tr>
<tr>
<td>Women</td>
<td>13/14 (93)</td>
<td>15/15 (100)</td>
</tr>
<tr>
<td>Malignant neoplasm (Location)</td>
<td>2/17 (12)b</td>
<td>1/15 (7)</td>
</tr>
</tbody>
</table>

Table 2. Summary of Therapeutic Attempts and Improvement in Patients With Dermatomyositis

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No Response</th>
<th>Partial Response</th>
<th>Full Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical steroids alone</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hydroxychloroquine</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Mycophenolate mofetil</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>IVIg</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cyclophosphamidea</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Abbreviation: IVIg, intravenous immunoglobulins.

aUsed as part of breast cancer protocol.