Analysis of the Benign to Malignant Ratio of Lesions Biopsied by a General Dermatologist Before and After the Adoption of Dermoscopy

Although the benefits of using dermoscopy as a diagnostic aid are well described,1-3 dermoscopy currently remains underutilized in the United States.4 According to a recent survey of US academic dermatologists, reasons cited for lack of utilization included lack of training, logistical constraints, and the belief that the procedure was not helpful.5 Also, some clinicians may be apprehensive about introducing dermoscopy into their practices because many of the studies that highlight the benefits of dermoscopy have been conducted by pigmented lesion specialists (PLSs).

The purpose of our pilot study was to assess changes in the management of pigmented lesions by a general dermatologist after the introduction of dermoscopy. As our end point, we calculated the benign to malignant ratio (BMR) for biopsied pigmented lesions having a clinical differential diagnosis of dysplastic nevus and/or melanoma. To gauge the performance of the general dermatologist, we compared his results to those of an experienced dermoscopy user who primarily sees patients with pigmented skin lesions.

Methods. Study Design. We performed a retrospective review of the practices of 2 dermatologists, one a general dermatologist (D.E.C.) and the other a PLS (D.P.), over a 4-year period. Both dermatologists conduct private practice at the Dermatology Faculty Practice Office of the New York University Langone Medical Center, an office of 13 practicing dermatologists. Our general dermatologist was chosen to be included in the study because he was the only general dermatologist in the practice who began to use dermoscopy on a routine basis during the study period. Specifically, he chose to add dermoscopy to his practice at the beginning of 2006, while the PLS began using dermoscopy in 1999.

For the purposes of this study, we designated the 2-year period from January 1, 2004, through December 31, 2005, as period 1—the period before the general dermatologist incorporated the use of dermoscopy into his practice. The 2-year period from July 1, 2006, through June 30, 2008, we designated period 2, during which dermoscopy was incorporated into the general dermatologist’s practice. We separated periods 1 and 2 by a 6-month interval to allow the general dermatologist enough time to become comfortable with the technique. Data collected from the PLS, who used dermoscopy for both periods, were used for comparison. The study was approved by the institutional review board of the New York University Langone Medical Center.

Data Collection. All histopathologic biopsy reports (n=2337) were retrieved from both periods. For the purposes of the study, histopathologic diagnoses of pigmented lesions were grouped into the following categories: melanoma, dysplastic nevus with mild to moderate atypia, dysplastic nevus with severe atypia, common nevus, seborrheic keratosis, solar lentigo, lichen planus–like keratosis, and pigmented actinic keratosis (Table).
To ensure that the BMR was based only on lesions removed owing to a clinical suspicion of malignancy, we collected the clinical differential diagnoses for all pigmented lesions biopsied. We defined clinically suspect lesions as those for which the study dermatologist’s differential diagnosis indicated melanoma and/or dysplastic nevus on the pathology requisition form. In this way, lesions removed for cosmetic purposes were excluded from the BMR.

Statistical Analysis. The BMR for each year was determined by dividing the total number of clinically suspect, histologically proven benign pigmented lesions (including dysplastic nevi, common nevi, seborrheic keratoses, solar lentigines, lichen planus–like keratosis, and pigmented actinic keratoses) by the total number of histologically proven melanomas.

Results. The histologic diagnoses rendered for all clinically suspect pigmented lesions biopsied during periods 1 and 2 and their BMRs are listed in the Table. For the general dermatologist, the ratio initially increased in the first year of dermoscopy use from 18.4:1 to 22.5:1. After additional dermoscopy use, however, this ratio decreased markedly to 7.9:1. The BMR of the general dermatologist in the last year of dermoscopy use approached that of the PLS (7.9:1 vs 6.0:1). The BMR for the PLS ranged from 3.2:1 to 9.0:1 during the study period.

Comment. In this pilot study, we demonstrated a positive impact of dermoscopy on the management of clinically suspect pigmented lesions by a general dermatologist. Following the introduction of dermoscopy into his practice and an approximately 18-month learning curve, the general dermatologist achieved a BMR that approached that of the PLS.

This study suggests that general dermatologists may improve their management of pigmented lesions by incorporating dermoscopy into their practices. In addition, our data support the notion that the learning curve for dermoscopy is a long one, and they underscore the value of providing dermoscopy training to dermatology residents so that they will be proficient users on graduation. Finally, we hope that results from this study can begin to alleviate concerns of general dermatologists and third-party payers regarding the use of dermoscopy by non-PLSs.

Vitaly Terushkin, BS
Melanie Warycha, MD
Marla Levy, BA
Alfred W. Kopf, MD
David E. Cohen, MPH, MD
David Polsky, MD, PhD

Author Affiliations: Ronald O. Perelman Department of Dermatology (Mr Terushkin, Drs Warycha, Kopf, Cohen, and Polsky, and Ms Levy) and Department of Pathology (Dr Polsky), New York University Langone Medical Center, New York.

Correspondence: Dr Polsky, New York University Langone Medical Center, Smilow Research Building, 522 First Ave, Ste 404, New York, NY 10016 (David.Polsky@nyumc.org).


Financial Disclosure: None reported.

Additional Contributions: Daniel Barnwell and Merilyn Noguera assisted with medical record reviews.


Distribution of Skin Type and Skin Cancer in Organ Transplant Recipients

The higher risk of skin cancer, especially squamous cell carcinoma (SCC), in the organ transplant recipient (OTR) population compared with the general population is well documented.1,2 Cumulative incidences have been noted as high as 70% to 82.1% in kidney transplant recipients (KTRs) after 20 years of immunosuppression.3,4 In the OTR population, high sun exposure,5 especially in the first 30 years of life, increased age at the time of the transplant,6 and length of exposure to immunosuppressive therapy3,7 are associated with the development of skin cancer. Bordea et al8 found that exposure to immunosuppression for over 10 years conferred a risk of skin cancer almost 10 times higher than exposure to immunosuppression for less than 5 years.

For SCC, an adjusted odds ratio of 4.3 was found for KTRs with Fitzpatrick skin type 1 or 2 to develop SCC.7 Among KTRs who developed skin cancer, skin type 2 was the most common skin type and was a statistical risk factor with a hazard ratio of 3.4 for KTRs developing any type of skin tumor; however, inclusion of KTRs with all skin types was very limited.9-11 Our hypothesis is that OTRs with skin types 3 through 6 have less risk of developing skin cancer than those with skin types 1 and 2. Given similar environmental exposure to UV light, we hypothesized that the duration of immunosuppression prior to developing skin cancer would be greater for OTRs with skin types 3 through 6 than for those with skin types 1 and 2. Our study of OTRs with all skin types investigated skin cancer development and age of OTR at time of transplant, skin type, and duration of immunosuppression.