Discordance of histopathologic parameters in cutaneous melanoma: Clinical implications

Samit Patrawala, MD, Alexander Maley, MD, Caitlin Greskovich, BA, Lauren Stuart, MD, MBA, Douglas Parker, MD, DDS, Robert Swerlick, MD, and Benjamin Stoff, MD
Atlanta, Georgia

Background: Histopathologic analysis remains the gold standard for the diagnosis of melanoma, however previous studies have shown a substantial rate of interobserver variability in the evaluation of melanocytic lesions.

Objective: We sought to evaluate discordance in the histopathological diagnosis and microstaging parameters of melanoma and subsequent impact on clinical management.

Methods: This was a retrospective review of 588 cases of cutaneous melanoma and melanoma in situ from January 2009 to December 2014 that were referred to Emory University Hospital, Atlanta, GA, for treatment. Per institutional policy, all outside melanoma biopsy specimens were reviewed internally. Outside and institutional reports were compared.

Results: Disagreement between outside and internal reports resulted in a change in American Joint Committee on Cancer pathologic stage in 114/588 (19%) cases, resulting in a change in management based on National Comprehensive Cancer Network guidelines in 105/588 (18%) cases.

Limitations: Given the retrospective nature of data collection and the bias of a tertiary care referral center, cases in this study may not be representative of all melanoma diagnoses.

Conclusion: These findings confirm consistent subjectivity in the histopathologic interpretation of melanoma. This study emphasizes that a review of the primary biopsy specimen may lead to significant changes in tumor classification, resulting in meaningful changes in clinical management. (J Am Acad Dermatol 2016;74:75-80.)

Key words: consensus; dermatopathology; discordance; melanoma; melanoma in situ; microstaging parameters; prognosis; second opinion.

In 2014, an estimated 76,100 patients were given a diagnosis of and approximately 9,710 patients died of melanoma in the United States.[1] However, these figures likely underestimate true incidence, as many thin and in situ melanomas treated in the outpatient setting are not properly reported into

Abbreviations used:

AJCC:	American Joint Committee on Cancer
EUH:	Emory University Hospital
NCCN:	National Comprehensive Cancer Network
SLNB:	sentinel lymph node biopsy

From the Department of Dermatology, Emory University School of Medicine.

Funding sources: None.
Disclosure: Dr Stuart serves on the Board of Governors for the College of American Pathologists. Drs Patrawala, Maley, Parker, Swerlick, and Stoff, and Ms Greskovich have no conflicts of interest to declare.
The findings from this research study were submitted as a meeting abstract to the American Society of Dermatopathology Conference, San Francisco, CA, October 8-11, 2015.

Accepted for publication September 6, 2015.

Reprint requests: Benjamin Stoff, MD, Department of Dermatology, Emory University School of Medicine, 1525 Clifton Rd NE, Atlanta, GA 30312. E-mail: bstoff@emory.edu.

Published online October 27, 2015.
0190-9622/$36.00

http://dx.doi.org/10.1016/j.jaad.2015.09.008

registries.[2] The incidence of melanoma continues to increase dramatically, at an overall rate of 33% for men and 23% for women, respectively, from 2002 to 2006.[3] Melanoma is increasing more rapidly than any other malignancy in men, and more rapidly than any other malignancy except lung cancer in women. These rises are not without consequence, as an individual loses an average of 20.4 years of potential life as a result of melanoma mortality compared with 16.6 years for all malignancies.[4]

The sharply rising incidence of and significant morbidity and mortality associated with melanoma underscores the importance of accurate diagnosis. Histopathologic analysis remains the gold standard for the diagnosis of melanoma.[5] Despite this, the literature is replete with examples of subjectivity in the histologic interpretation of melanoma and other melanocytic tumors.[6-28] For example, in one study, the reproducibility in histopathologic diagnosis of a select group of melanocytic tumors only occurred in 65% of cases.[6]

CAPSULE SUMMARY

- Subjectivity exists in the histopathological interpretation of melanoma.
- Discordance of melanoma biopsy specimens resulted in a change in American Joint Committee on Cancer pathologic stage in 114/588 (19%) cases, resulting in a change in management based on National Comprehensive Cancer Network guidelines in 105/588 (18%) cases.
- Additional review of melanoma biopsy specimens may lead to changes in clinical management.

The nature of discrepancies between original and referral pathologic diagnoses and the impact of second opinion on patient care has also been studied. Second opinion in anatomic pathology has been advocated for patient safety, optimal patient care, and health care cost savings. With this in mind, institutional policies mandating second review of pathologic diagnosis of melanoma in the course of referral for treatment have been instituted at a number of centers.[29]

According to the 2009 American Joint Committee on Cancer (AJCC) Melanoma Staging and Classification System, tumor thickness, ulceration, mitotic figures, and microscopic satellites are the most important characteristics of the primary tumor predicting outcome.[30] Given the recognition that these key histopathological features guide management decisions and that previous studies have shown discordance in histologic interpretation of melanocytic tumors, it is routine protocol at Emory University Hospital (EUH), Atlanta, GA, to review the diagnostic pathology slides of all melanoma biopsy specimens from patients referred to our institution for ongoing management of melanoma.

The purpose of this study is to evaluate discordance in the histopathological diagnosis and microstaging parameters of melanoma and subsequent alterations in clinical management based on the National Comprehensive Cancer Network (NCCN) guidelines.

METHODS

After institutional review board approval, a retrospective review was performed of cutaneous melanoma cases referred to our institution from January 2009 to December 2014. It is policy at EUH that outside slides from original melanoma biopsy specimens are reviewed by a board-certified dermatopathologist at our institution before undergoing additional treatment. Referrals to EUH were made for routine treatment of melanoma, not for expert second opinion for diagnosis. Intrainstitutional dermatopathologists were not blinded to referral reports at the time of diagnosis. All melanomas, melanomas in situ, and atypical melanocytic neoplasm cases with melanoma staging parameters reported were included in the study.[29] Conventional, dysplastic, and ambiguous melanocytic nevi (ie, atypical Spitzoid lesions) were excluded from the study.

The following data were collected for all cases from both the outside pathology reports and the corresponding pathology reports issued at EUH: final diagnosis, Breslow thickness, ulceration, regression, mitotic figures, angiolymphatic invasion, perineural invasion, and microsatellites. Pathologic staging of melanomas based on the 2009 AJCC classification system was performed on each case and these results were subsequently compared.[30] When discordance between an original pathology report and the report issued at EUH occurred, indications for changes in clinical management were defined based on NCCN guidelines (version 3.2015), which include recommendations on surgical excision margins, sentinel lymph node biopsy (SLNB), and frequency of clinical follow-up.[2] However, specific management decisions for individual patients were ultimately made on a case-by-case basis after extensive discussion with the patient.

Statistical analysis

Data were entered into a spreadsheet (Excel, Microsoft Corp, Redmond, WA) for analysis.