

Evaluation of dermoscopic features for distinguishing melanoma from special site nevi of the breast

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Background: Nevi of special sites display aberrant clinical and histologic features that can be difficult to distinguish from melanoma, leading to unnecessarily high rates of excision with poor cosmetic or functional results. Dermoscopy can improve clinical assessment of melanocytic lesions by visualizing morphologic structures beyond the epidermis.

Objective: We sought to assess the value of specific dermoscopic features for diagnosing melanocytic neoplasms arising on the breast area in females.

Methods: In this retrospective cohort study, we collected clinical and dermoscopic information for 104 nevi and 13 melanomas removed from the breast, chest, and areola, and evaluated the diagnostic performance of each dermoscopic feature.

Results: Melanomas from the breast area were larger ($P = .0175$) than nevi and occurred in older women ($P = .0117$). Irregular blotches, nonuniform radial streaks, blue-gray veil, and regression were highly specific for melanoma, whereas atypical network and irregular dots and globules had low to moderate specificity.

Limitations: This study was retrospective with a small sample size.

Conclusion: Compared to melanocytic neoplasms from other sites, atypical network and irregular dots and globules were poor indicators for breast melanoma. Irregular blotches, nonuniform radial streaks, blue-gray veil, and regression were highly specific and should heighten clinical suspicion for melanoma arising on the breast. (J Am Acad Dermatol <http://dx.doi.org/10.1016/j.jaad.2016.04.006>.)

Key words: breast; dermatopathology; dermoscopy; malignant melanoma; nevi of special sites; pattern analysis.

Dermoscopy has been shown to improve the evaluation of pigmented lesions by allowing for visualization of important morphologic structures beyond the epidermis.^{1,2} The diagnostic utility of specific dermoscopic features has been assessed in a number of studies, most of which include melanocytic neoplasms from a variety of anatomic sites. It is well established that nevi of special sites—occurring in acral, genital, and flexural sites, on the head or neck, and along the milk

line^{3,4}—can display aberrant histologic features that, in some cases, may be difficult to distinguish from melanoma. Although these site-specific histologic features can impact the dermoscopic appearance of nevi arising in these locations, fewer studies have examined the nuances of dermoscopy for evaluating melanocytic neoplasms of special sites.

Many nevi of special sites arise in anatomically sensitive areas, where aberrant clinical and histologic characteristics may lead to unnecessarily high rates of

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excision and re-excision. Breast nevi, for example, have been reported to have significantly higher levels of histologic atypia than nevi from other sites. Clinically, they are also commonly larger than 6 mm in diameter with irregular borders.^{3,5} Particularly in women, excision of such lesions from the breast and chest area can lead to poor cosmetic or functional results. Small case reports that have investigated the dermoscopic features of nevi on the breast and along the milk line have described the presence of a prominent pigment network and large globules³ or large, cobblestone-like globules and irregular dark dots in lesions involving the nipple.^{3,6} To our knowledge, no studies have thoroughly examined the dermoscopic features of this site across a large cohort of melanocytic lesions to characterize features that may be more typical of benign or malignant neoplasms.

To more rigorously assess the utility of dermoscopy for differentiating breast nevi from cutaneous melanomas of the breast in females, we conducted a retrospective cohort study of 104 nevi and 13 cutaneous melanomas arising on the chest, breast, and nipple. We compared clinical characteristics, reviewed dermoscopic descriptions, and calculated the sensitivity, specificity, predictive values, and likelihood ratios for each dermoscopic feature. By describing key clinical differences in benign and malignant lesions arising in the breast area of women, we hope to improve the management of these diagnostically challenging lesions.

METHODS

After obtaining approval from the Northwestern University Institutional Review Board, we reviewed our dermatopathology database for cases of biopsy-proven benign melanocytic lesions and melanoma arising from the chest area of women. We constructed a search using “breast,” “nipple,” and “chest” as site descriptors and selected cases that were excised with concern for malignancy by searching for “melanoma” in the clinical text. Patient age, race, size of lesion, site, and final diagnosis were recorded. For each pathology result, we reviewed the corresponding clinical encounter in the electronic medical record for inclusion of a dermoscopic examination by the evaluating physician. Dermoscopic descriptions were evaluated for

previously defined features used in pattern analysis.^{7,8} Global patterns, such as reticulated or granular, were assumed to be regular and symmetric unless specifically stated otherwise. If a pattern was recorded to have both symmetric and asymmetric elements (ie, “light brown granules scattered throughout; area of blue-gray globules at lateral portion”), it was considered asymmetric. The presence of hypopigmentation was recorded for descriptions indicating a “loss of pigment network,” “areas of pigment loss,” or a “moth eaten” appearance.

Statistical analysis

For clinical and histologic data, the Fisher exact test was used to compare categorical variables and the Wilcoxon rank sum test was used to compare continuous or ordinal variables. *P* values

less than .05 were considered statistically significant. For dermoscopic data, the overall frequency of each feature was determined by finding the proportion of all melanocytic lesions in which the feature was present. Sensitivities and specificities were also calculated, in which sensitivity represented the proportion of melanomas in which a given feature was present, and specificity represented the proportion of nevi in which a given feature was absent. We then calculated positive predictive values to assess the probability that a lesion with a given dermoscopic feature would be melanoma, and negative predictive values to assess the probability that a lesion without a specific feature would be benign. Positive likelihood ratios [sensitivity/(1–specificity)] and negative likelihood ratios [(1–sensitivity)/specificity] were also calculated to assess how many more times a given feature was more or less likely, respectively, to be seen in a melanoma compared with nevi. The χ^2 test was used to assess for statistical significance between dermoscopic features and a diagnosis of melanoma, in which *P* values less than .05 were considered statistically significant.

RESULTS

Our search returned 134 nevi and 16 melanomas with clinical dermoscopic descriptions. In all, 29 nevi and 3 melanomas were excluded from analysis for lack of dermoscopic terminology included in traditional pattern analysis. An additional nevus was excluded for failure to record the size of lesion.

CAPSULE SUMMARY

- Some breast nevi have clinical and histologic features that mimic melanoma.
- In our study, atypical network and irregular dots/globules were not associated with melanoma.
- Older patient age and large lesion size, asymmetric blotches, nonuniform radial streaks, blue-gray veil, and regression should heighten clinical suspicion of melanoma arising on the breast.

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