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Title

Management of pigmented lesions in primary care: effects of electrical impedance spectroscopy use

Priority 1 (Research Category)

Evaluation of diagnostic or screening test

Presenters

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Abstract

Context

Primary care providers (PCPs) are often the ‘first line of defense’ in the detection of skin cancers. For patients with concerning skin lesions, PCPs may choose to perform a biopsy or refer to a specialist. A handheld electrical impedance spectroscopy (EIS) device has been approved by the FDA to assist in melanoma detection and differentiation from benign lesions.

Objective

We sought to examine whether EIS, currently employed by some dermatologists, is beneficial to PCPs by comparing the accuracy of PCPs’ management decisions for pigmented lesions based on visual examination alone to that based on concurrent visual and EIS evaluation.

Design

An anonymous online survey elicited clinical management decisions from practicing PCPs for various pigmented lesions.

Setting

PCPs at clinics affiliated with Institute for Family Health and Community Healthcare Network, two organizations delivering care to the New York City area through a network of community health centers, were included.

Participants

Physicians and nurse practitioners (NPs) were invited to participate. 61 of 142 invitees participated (43% response rate).

Instrument

A survey containing clinical images and EIS results for 12 histologically-confirmed lesions (including melanocytic nevi, dysplastic nevi, and malignant melanomas) elicited respondents' decision to biopsy/refer and selection for lesional diagnosis, first after being shown a clinical image alone and again after being provided the EIS score in addition to the clinical image for each lesion.

Outcome Measures

The sensitivity, specificity, and % accuracy of lesional diagnosis selections were compared for decisions made based on visual examination alone to decisions made based on concurrent visual and EIS evaluation.

Results

44 physicians and 17 NPs participated, making a total of 1354 clinical decisions. Overall, with the addition of EIS to visual inspection of clinical images, the sensitivity of respondents' biopsy/referral decisions for melanomas and severely dysplastic nevi increased from 69.2% to 90.0% ($p < .001$), while specificity increased from 44.0% to 72.6% ($p < .001$). Physicians, NPs, and providers with varying years of experience each saw significant improvements in sensitivity, specificity, and diagnostic accuracy with the addition of EIS scores.

Conclusions

Overall, this study suggests that the accuracy of management decisions for pigmented lesions may be improved with adjunctive use of EIS with visual inspection.