Whole-body screening and ed. in melanoma-prone families may improve early detection rates

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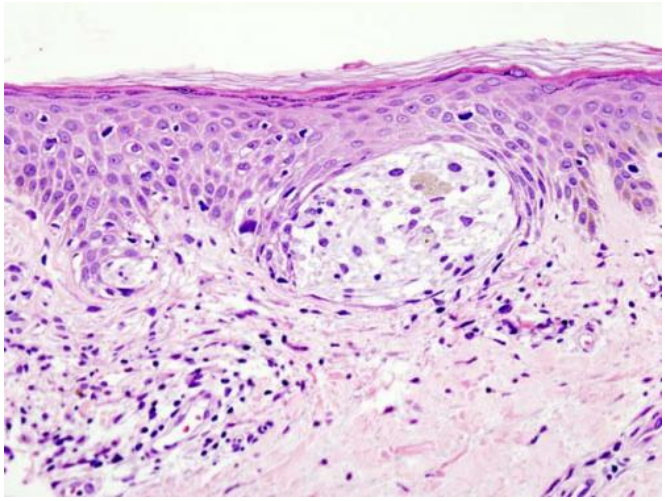

Melanoma in skin biopsy with H&E stain—this case may represent superficial spreading melanoma. Credit: Wikipedia/CC BY-SA 3.0

Among patients at high risk of melanoma, those who received routine skin cancer screening and education about skin self-exams were significantly more likely to be diagnosed with thinner and earlier stage melanomas, according to results published in *Cancer Epidemiology, Biomarkers & Prevention*.

"Whole-body screening for melanoma is currently routine for individuals at high risk for melanoma. These individuals include members of melanoma-prone families, categorized as having at least two relatives who have had melanoma, and those with inherited pathogenic gene variants that increase melanoma risk," said Michael Sargen, MD, a dermatologist and clinical fellow in the Division of Cancer Epidemiology and Genetics at the National Cancer Institute (NCI), part of the National Institutes of Health (NIH). "However, the benefit of screening in melanoma-prone families has not been previously quantified."

To better understand if screening and education among melanoma-prone families could result in earlier melanoma detection, Sargen and colleagues evaluated data from the NCI Familial Melanoma Study, which was initiated in 1976 to investigate inherited and environmental risk factors for the disease. "At enrollment and subsequent in-person visits to the NIH, study participants received whole-body screening for melanoma, total body photographs with closeups of potentially problematic moles, education about the appearance of melanoma, and strategies for protecting their skin from ultraviolet (UV) damage," Sargen explained. Participants in the study were also counseled to follow up with their local dermatologist annually for whole-body screening exams.

To evaluate the success of the study, Sargen and colleagues compared differences in melanoma thickness and tumor stage between participants diagnosed with melanoma before and after enrollment (the pre-study cohort and the prospective cohort, respectively). "Tumor thickness, or how deep the tumor grows beneath the surface of the skin, is associated with an increased risk of death from melanoma," said Sargen. The researchers also compared tumor thickness trends between participants in their study and cases in the general population by using data from Surveillance, Epidemiology, and End Results (SEER) registries.

There was a total of 293 melanoma cases in the NCI Familial Melanoma Study, with 246 cases in the pre-study cohort, and 47 cases in the prospective cohort. Participants enrolled in the study from 1976 through 2014. There was a total of 79,530 cases analyzed in the SEER registries

between 1973 to 2016. Because all of the participants in the NCI Familial Melanoma Study were white, analyses of SEER data were also restricted to white patients. Information on melanoma thickness was missing for 24 percent of melanoma cases in the NCI Familial Melanoma Study and 8.7 percent of melanoma cases found in the SEER registry; the researchers imputed the missing data.

Sargen and colleagues evaluated if the interventions in the NCI Familial Melanoma Study impacted melanoma thickness and tumor stage at diagnosis by comparing these features between the prospective and pre-study cohorts. After adjusting for gender and age, the researchers found that cases in the prospective cohort had significantly thinner melanomas compared with cases in the pre-study cohort (0.6mm versus 1.1mm, respectively). Further, cases in the prospective cohort were significantly more likely to be diagnosed at the early T1 stage compared with cases in the pre-study cohort (83 percent versus 40 percent, respectively).

Next, the researchers evaluated whether changes in melanoma thickness over time among cases in the NCI Familial Melanoma Study differed from trends observed in the general population. "Melanoma thickness at diagnosis in the United States has been decreasing since 1973, when we started tracking such data," Sargen explained. When the researchers compared the observed tumor thickness among members of melanoma-prone families with the expected tumor thickness based on the U.S. general population with respect to age, calendar period, and gender, they found that the melanomas diagnosed after enrollment in the NCI Familial Melanoma study were thinner than the predictions based on the U.S. general population.

"This suggests that the downward trend in melanoma thickness observed in the general population does not fully explain the reductions in thickness seen in melanoma-prone families, and that long-term surveillance may assist in the earlier diagnosis of melanoma in high-risk populations," Sargen said.

"Our results suggest that the screening and education provided in the NCI Familial Melanoma Study may improve early detection of melanoma in melanoma-prone families," he added.

Limitations of this study include the relatively small sample size of melanoma cases in the NCI Familial Melanoma Study and the imputation of missing melanoma thickness data. "Additionally, since this was a prospective cohort study, we were not able to distinguish the independent effect of each intervention," Sargen said. "Randomized control studies are needed to understand the impact of each aspect of the intervention, such as whole-body screening, melanoma education, or strategies for skin protection."

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