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MELANOMA UPDATE: RECENT TECHNOLOGICAL ADVANCES ARE HELPING DERMATOLOGISTS DIAGNOSE AND TREAT EARLY STAGE MELANOMAS

MIAMI (March 4, 2010) – According to estimates from the American Cancer Society, melanoma, the most serious form of skin cancer, was responsible for an estimated 8,650 deaths in the United States in 2009. Of growing concern among dermatologists is the fact that melanoma is now the most common form of cancer for young adults 25-29 years old and the second most common cancer in adolescents and young adults 15-29 years old. Early diagnosis is the key to curing this potentially deadly disease, and diagnostic tools are playing a crucial role in aiding dermatologists to spot melanomas at earlier – and more curable – stages.

Speaking today at the 68th Annual Meeting of the American Academy of Dermatology (Academy), dermatologist Harold S. Rabinovitz, MD, FAAD, volunteer professor in the department of dermatology at the University of Miami Miller School of Medicine in Miami, Fla., reviewed the latest diagnostics used to catch early stage melanomas and why a long-standing visual aid continues to help dermatologists – and patients – understand the nuances of this cancer.

“Unfortunately, melanoma is the great masquerader and millions of moles have at least one feature that falls into the criteria dermatologists refer to as the ABCDEs of melanoma,” said Dr. Rabinovitz. “That’s why in addition to visually inspecting the skin, high-tech diagnostic tools in the future will be helpful in determining whether a suspicious mole is actually a melanoma or a benign lesion.”

ABCDs and E of Melanoma

One of the key educational tools used to train physicians, medical personnel and the general public on how to recognize early melanomas is the ABCDEs of Melanoma Detection. These characteristics of moles for which

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individuals should check their skin include **Asymmetry** (one half unlike the other half), **Border** (irregular, scalloped or poorly defined), **Color** (varies from one area to another; shades of tan and brown, black; sometimes white, red or blue), and **Diameter** (the size of a pencil eraser or larger).

Dr. Rabinovitz explained that recently the Academy has added an “E” to these criteria, which stands for **Evolving** (or changing in size, shape or color). “A mole with any of these characteristics, or one that is an ‘ugly duckling’ – meaning it looks different from the rest – should be brought to a dermatologist’s attention immediately for proper evaluation,” said Dr. Rabinovitz. “Visually inspecting a suspicious mole is the first step in determining whether it is a melanoma, and dermatologists now have a host of technologically advanced tools to confirm a diagnosis.”

**Dermoscopy**

Since there are few surface features to distinguish melanomas from benign pigmented lesions, more dermatologists are using hand-held microscopes to identify features not visible to the naked eye. Dr. Rabinovitz explained that these hand-held microscopes, known as dermascopes, work by magnifying and illuminating the mole – increasing the ability to diagnose melanoma.

“In instances where a definitive diagnosis cannot be determined with dermoscopy, a biopsy – in which a small sample of tissue from the suspicious lesion is removed and examined in the laboratory – would be needed,” said Dr. Rabinovitz.

**Full-Body Photography and Mole Mapping**

Total-body photography is an important tool used by some dermatologists in the surveillance of high-risk individuals who may develop melanoma. For example, having numerous moles puts an individual at high risk for melanoma. Dr. Rabinovitz noted that there are some individuals who are at higher risk for developing melanoma not only within their existing moles but also within their normal skin. Only 30 percent of melanomas occur within a pre-existing mole.

Photographs provide a record against which we can assess changes in moles over time,” said Dr. Rabinovitz. “The documented change, or lack thereof, is biologic information that we can use to consider whether an excision is necessary.”

Some of the indications for using total-body photography include personal history of melanoma, family history of melanoma, atypical mole syndrome, or multiple moles of different size, shape and color.
Another less commonly used method of following change with pigmented lesions is mole mapping. With this technology, suspicious moles can be digitized with demoscopy cameras and reimaged at three- to six-month intervals to determine if any changes in characteristics have occurred in this time.

"Mole mapping has been selectively useful in detecting early melanomas, as it offers a baseline for comparing changes in skin lesions," said Dr. Rabinovitz. "It is especially beneficial in high-risk patients who may have so many atypical moles that it becomes difficult to remove all of these unusual appearing moles that are not melanoma on biopsy."

**Reflectance Confocal Microscopy (RCM)**

The ongoing effort to enhance the clinical diagnosis of melanoma has led to the development of other non-invasive imaging techniques. One such technique is reflectance confocal microscopy (RCM), which offers imaging at cellular level resolution and allows the visualization of both the epidermis (top layer of skin) and the upper dermis (the deepest layer of skin) in real time. This procedure is performed with a laser light that is able to focus on a specific spot within the tissue, which is then automatically scanned over the entire level of the skin.

"The ability to scan both the epidermis and the dermis has made RCM a promising technique for the non-invasive diagnosis of skin growths and response to non-invasive treatment," said Dr. Rabinovitz. "In fact, a recent study has demonstrated that RCM enhances the secondary evaluation of moles and melanoma, making it potentially an important diagnostic tool in monitoring changes beneath the skin."

**Gene Profiling**

Based on preliminary data, gene profiling is an exciting new research area within medicine that Dr. Rabinovitz believes might play a role in the clinical evaluation of melanoma. Gene profiling measures the activity of thousands of genes simultaneously to create an overall impression of how cells function.

Cancer at its most basic level is a genetic disease, and the biological events that initiate the malignancy represent alterations in the expression of genes. Like normal cells, biomarkers exist for cancerous cells and this signature can be used to identify "cancer," said Dr. Rabinovitz. "In the case of melanoma, the object would be to identify an alteration in genes to create a classifier for clinical diagnostic purposes." This is being performed with tape stripping of moles.

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Future Technologies

Over the past 15 years, researchers have studied technologies that could accurately diagnose pigmented lesions, with the goal of developing a reliable, non-invasive diagnostic tool to aid dermatologists in the early detection of melanoma. One such device, the computerized image analysis system, uses a computerized analysis algorithm for the automatic diagnosis of melanoma.

“The technological advances in melanoma detection in the future will significantly improve our ability to detect early melanomas and help save countless lives,” said Dr. Rabinovitz. “However, keeping a vigilant eye on our skin for any changes that could signal a problem is an irreplaceable first step in the process.”

Academy Provides Free, Do-it-Yourself Tool for Tracking Moles

To help spot melanoma at its earliest, and most curable, stage, the Academy recommends that everyone should be familiar with the ABCDEs of melanoma and report any suspicious moles or changes in the skin to a dermatologist for proper diagnosis. In addition, the Academy’s “Body Mole Map,” which can be downloaded on the Academy’s website at http://www.melanomamondays.org/documents/Body_Mole_Map_11-09.pdf, is a tool that creates a record for people to track where spots appear on their skin and if these spots have changed over time when new skin self-exams are performed.

Headquartered in Schaumburg, Ill., the American Academy of Dermatology (Academy), founded in 1938, is the largest, most influential, and most representative of all dermatologic associations. With a membership of more than 16,000 physicians worldwide, the Academy is committed to: advancing the diagnosis and medical, surgical and cosmetic treatment of the skin, hair and nails; advocating high standards in clinical practice, education, and research in dermatology; and supporting and enhancing patient care for a lifetime of healthier skin, hair and nails. For more information, contact the Academy at 1-888-462-DERM (3376) or www.aad.org.

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¹Cancer Epidemiology in Older Adolescents & Young Adults. SEER AYA Monograph, Pages 53-57, 2007.