Confocal Laser Microscopy Gaining Momentum

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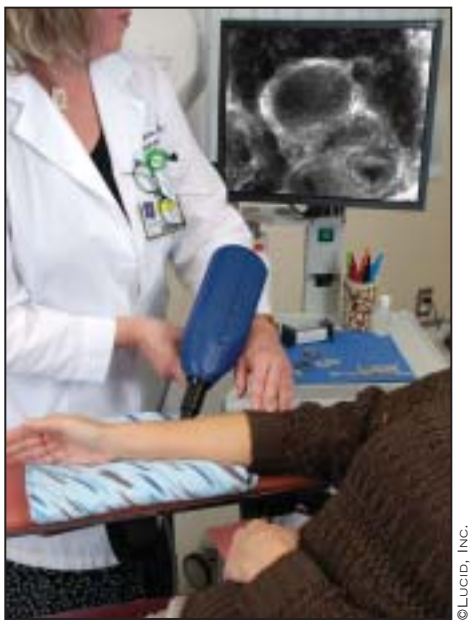
MONTREAL — Formation of an international confocal microscopy group, software that aids the detection and mapping of skin lesions, and introduction of a handheld device are among recent advances to aid in the diagnosis of lentigo maligna and other lesions in real time.

Researchers hope widespread adoption of confocal laser microscopy progress will permit further early diagnoses of cutaneous melanoma and other lesions at the bedside. "It is critical to do biopsies early. If you believe cancer starts from a single cell, you can diagnose it early [with confocal laser microscopy]. That is what we are working on now," Dr. Richard Langley said.

Described as a "living skin biopsy" by some, microscopy is not new. Pathologists have employed the intensely focused light to examine tissue specimens since the 1950s, he said. There is a limitation in live patients, however. "We cannot go through



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A hand-held confocal microscopy device is one recent dermoscopy advancement.

a patient's skin, so we deal with reflective light. We still have confocal concepts, but we have real-time results," Dr. Langley said at the annual conference of the Canadian Dermatology Association.

Dr. Langley and his colleagues were the first to report use of confocal laser microscopy in a series of 40 dermatology patients with superficial melanoma (J. Am. Acad. Dermatol. 2001;45:365-76).

Others have since validated that microscopy distinguishes between malignant and benign lesions in vivo. To date, studies include more than 400 patients, said Dr. Langley of Dalhousie University, Halifax, N.S.

Last year, he and his associates published the first prospective study to compare microscopy with dermoscopy. "We decided to see if we can do a prospective, blinded, single-institution study," he said.

They assessed 125 patients with suspicious pigmented lesions using both technologies, followed by a confirmatory biopsy (Dermatology 2007;215:365-72). They detected a total of 88 melanotic nevi and 37 melanomas. "Sensitivity was higher with confocal versus dermoscopy [97% vs. 89%, respectively]. The specificity was about the same [83% vs. 84%]," Dr. Langley said. "We missed one melanoma with the confocal technology, so it was not perfect."

For dermatologists accustomed to reading cross-sectional biopsies, it may take an adjustment to recognize the clusters of melanocytes, Dr. Langley said. "You have to retrain your eye to look differently—you are looking from above. Also, it is in black and white, not color, like we're used to."

Indicative of the growing interest in this technology is the formation of the International Confocal Microscopy Working Group, launched at the February 2008 American Academy of Dermatology annual meeting in San Antonio. The group aims to form an international network of medical professionals working with confocal laser microscopy and to promote education, training, and additional research about the technology.

New software for microscopy also emerged in the past year (Electronic Zoom, Lucid Inc.). The video-capture software allows dermatologists or dermatopathologists to map a lesion and tag an area of interest. "You start with a macro image and, if you see an area you want to focus on, the software can be engaged," Dr. Langley said.

Another advance is the availability of a hand-held confocal microscopy device (VivaScope 3000, Lucid). Dr. Langley had no relevant financial disclosures. ■