Commentary on "In vivo imaging characterization of basal cell carcinoma cutaneous response to high-dose ionizing radiation therapy: A prospective study of reflectance confocal microscopy, dermoscopy, and ultrasound"

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Basal cell carcinoma (BCC) is the most common cancer worldwide, with an increasing incidence each year.[1] While most patients with basal cell carcinoma (BCC) are cured with surgical or destructive modalities, a portion of patients are unwilling or unable to undergo surgery. For this subgroup, radiation therapy is one modality that can be considered.

Given a trend toward increased use, in 2013, the American Academy of Dermatology issued a Position Statement on Superficial Radiation Therapy for Basal Cell Carcinoma (BCC) and Squamous Cell Carcinomas (SCC).[2] In the statement, the Academy highlighted the facts that surgical management remains the most effective treatment for BCC, providing the highest cure rates, but that radiation therapy can be considered as a secondary option when surgical intervention is contraindicated or refused.

It follows naturally that patients who decline surgical intervention of their BCC may also decline additional biopsies to confirm that the therapy has been effective. This patient population may prefer a noninvasive imaging method such as dermoscopy, high-frequency ultrasonography, or reflectance confocal microscopy. In this edition of the *Journal of the American Academy of Dermatology*, Dr Navarrete-Dechent and colleagues[3] characterize the response of BCC to high-dose ionizing radiation therapy using these 3 mechanisms.

Abbreviation used:
BCC: basal cell carcinoma

Multiple noninvasive imaging tools are available to dermatologists to assist in the diagnosis and management of cutaneous diseases.[4] Dermoscopy is the most commonly used method and involves a handheld device to magnify the skin's surface up to ×10. High-frequency ultrasound uses reflected sound waves off of the skin surface, generating an image on a computer monitor in gray scale. This technology can visualize cutaneous structures to a depth up to 6 to 7 mm. Reflectance confocal microscopy provides cellular resolution of cutaneous structures. These devices use a near-infrared laser to create images based on differences in refractive indexes of the various components of the skin, with a

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magnification of ×30 and a depth of penetration of approximately 200 μm.

In this study, 137 imaging assessments were performed in 12 patients before treatment, and again at 6 weeks, 3 months, and 12 months after skin surface brachytherapy. Consistent with prior studies, the authors found that dermoscopy was the least helpful in evaluating the presence or absence of residual BCC. The authors did find, however, that reflectance confocal microscopy was able to elucidate the tissue response to radiation therapy in vivo and that this technology may be helpful in monitoring the response of BCC to radiation therapy and other nonsurgical modalities in the future.

Although promising, the study is limited by a small sample size and the lack of a control group. One cannot extrapolate the data to BCC of any subtype, size, or location, and some changes may be inherent to the use of radiation therapy alone as opposed to resolution of tumor. Nevertheless, as this study demonstrates, noninvasive imaging is likely to emerge as an important tool for monitoring tumor resolution in patients with BCC treated with nonsurgical modalities.

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