

Medical > In Vivo > Melanoma & Pigmented Lesion Research

117

Advances in noninvasive imaging of melanoma.

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ABSTRACT

Melanoma is the most dangerous type of skin cancer and its incidence has risen sharply in recent decades. Early detection of disease is critical for improving patient outcomes. Any pigmented lesion that is clinically concerning must be removed by biopsy for morphologic investigation on histology. However, biopsies are invasive and can cause significant morbidity, and their accuracy in detecting melanoma may be limited by sampling error. The advent of noninvasive imaging devices has allowed for assessment of intact skin, thereby minimizing the need for biopsy; and these technologies are increasingly being used in the diagnosis and management of melanoma. Reflectance confocal microscopy, optical coherence tomography, ultrasonography, and multispectral imaging are noninvasive imaging techniques that have emerged as diagnostic aids to physical exam and/or conventional dermoscopy. This review summarizes the current knowledge about these techniques and discusses their practical applications and limitations.

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