Skin cancer detection using non-invasive techniques

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ABSTRACT

Skin cancer is the most common form of cancer and is globally rising. Historically, the diagnosis of skin cancers has depended on various conventional techniques which are of an invasive manner. A variety of commercial diagnostic tools and auxiliary techniques are available to detect skin cancer. This article explains in detail the principles and approaches involved for non-invasive skin cancer diagnostic methods such as photography, dermoscopy, sonography, confocal microscopy, Raman spectroscopy, fluorescence spectroscopy, terahertz spectroscopy, optical coherence tomography, the multispectral imaging technique, thermography, electrical bio-impedance, tape stripping and computer-aided analysis. The characteristics of an ideal screening test are outlined, and the authors pose several points for clinicians and scientists to consider in the evaluation of current and future studies of skin cancer detection and diagnosis. This comprehensive review critically analyses the literature associated with the field and summarises the recent updates along with their merits and demerits.

KEYWORDS:

Computer aided analysis; Dermatology; Fluorescence spectroscopy; Optical tomography