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Identifying Areas for Improvement in Remote Skin Cancer Management: Surveillance, Diagnostics, and Skin of Color

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INTRODUCTION

Multiple practices across the country transitioned to using remote teledermatology amidst physical distancing requirements during the COVID-19 pandemic. Teledermatology, a technological advancement in remote medical care that predates the pandemic by several decades, has previously been studied for its ability to evaluate numerous skin conditions. Its efficacy has been well-reviewed for multiple chronic skin conditions. However, its use in skin cancer needs to be further evaluated. Here, we identify gaps in research on the use of teledermatology in the management of skin cancer.

Perhaps the most immediate area in skin cancer management where face-to-face contact can be reduced is in skin cancer surveillance. For this indication, multiple studies have evaluated the efficacy of examining suspicious lesions remotely. A recent review by Chuchu et al evaluated studies that were assessing skin cancer diagnosis with teledermatology alone, or in comparison to face-to-face dermatology. Four of these studies evaluated the efficacy of teledermatology in diagnosing any skin cancer, including a total of 717 lesions. Summary sensitivity was 94.9% and summary specificity was 84.3% for these studies.[1]

Teledermatology has improved with the integration of dermoscopy. Recent studies have also shown that the addition of cameras to smartphones or mobile devices capable of taking dermoscopic quality images, known as teledermoscopy, can increase the accuracy of teledermatology with respect to diagnosing melanocytic lesions. In this technology, mobile devices or cameras are fixed with attachable magnifying devices and a secure web-based platform that allows for safe image transfer to providers.

While preliminary identification of a malignant melanocytic lesion can be done remotely, a biopsy is still necessary for definitive diagnosis. In-person appointments are almost always required for biopsies of suspicious lesions.[2] However, research into technologies that can diagnose skin cancers non-invasively reflects an intriguing area of research in teledermatology. These strategies may provide alternative solutions for diagnosing melanocytic lesions, where images can be evaluated remotely. A relatively recent example of one of these strategies is optical coherence tomography (OCT). OCT is a non-invasive imaging technique that uses low-power infrared light to provide real-time images of the areas beneath the surface of the skin. The use of OCT was also deemed a strong equivalent to standard excisional biopsy in diagnosing basal cell cancers (BCC).[3] Reddy et al evaluated 31 studies exploring the use of OCT in diagnosing BCC, where sensitivities and specificities were listed as 89.3% and 60.3%, respectively.

Another diagnostic technique is reflectance confocal microscopy (RCM). Similar to optical coherence tomography, RCM is a non-invasive imaging technique that allows for visualization of the layers of the skin. RCM utilizes the reflectance of light from structures within the skin that provide contrast, such as melanin. RCM is currently being evaluated as a means of diagnosing melanomas and basal cell carcinomas. In a recent demonstration of remote diagnostic capabilities, a case reported by Rubinstein et al describes a situation where a BCC was diagnosed remotely using confocal microscopy.[4] In this case, reflectance confocal microscopy was read remotely over a commercial WebEx screen share, and a diagnosis of nodular BCC was made allowing the patient to avoid an in-person biopsy. Further investigation into these technologies may prove beneficial in allowing dermatologists to evaluate and diagnose skin cancers, removing an additional face-to-face encounter with patients.

Teledermatology was originally created with the intention of improving access to patients, expanding the demographic pool evaluated by dermatologists. Therefore teledermatology, and more specifically, teledermoscopy, should be advanced cautiously, so as not to improve the efficiency of medical practices at the expense of patients with skin of color. Skin cancers in patients with skin of color are more likely to present at later stages, in atypical locations, and have worse outcomes. It is essential for dermatologists to be aware of this when evaluating skin cancer remotely. Recent studies have also found that digital resources present less diseases in patients with skin of color,[5] calling on educational resources

to comprehensively illustrate pathology across all skin tones. Further studies evaluating the efficacy of teledermatology in evaluating skin diseases and skin cancers in patients with skin of color are needed.

While the immediate implementation of teledermatology served the function of protecting providers and patients during the COVID-19 pandemic, it may also serve to help practitioners and patients facing logistical barriers in face-to-face appointments in the years following the pandemic. Further research needs to be performed in the areas of surveillance and diagnostics, and studies should assess how effective these methods are in evaluating different skins of color, so our knowledge regarding the remote evaluation of skin cancer applies to all patients.

DISCLOSURES

The authors have no relevant conflicts to report.

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