Editorial

Is no biopsy appropriate for oral potentially malignant lesion(s) without loss of autofluorescence using VELscope®? A large prospective diagnostic study

The search for adjuncts to promote early detection of oral dysplasia and cancer continues. Among the challenges, adjuncts are required to distinguish much more common inflammatory lesions from oral potentially malignant lesions, and specifically to identify much less common dysplastic lesions and squamous cell carcinoma (SCC).

This issue of the Oral Oncology presents a well-written article by Liu, et al. that examines the longstanding and provocative controversy concerning use of a visually enhanced fluorescence light source (VELscope®) as a primary diagnostic modality where retention of or loss of tissue fluorescence (autofluorescence) could be a driving factor in determining whether tissue biopsy is indicated in the absence of a follow-up strategy for persistent mucosal abnormalities. The conclusions of Liu and colleagues are based on their prospective study where the concept was submitted to preliminary evaluation. Clinicians and patients would benefit from a well validated tool that can assist in approach to biopsy, accelerating the decision to biopsy and potentially assisting in biopsy site selection The report by Liu et al, presents an initial evaluation of the impact of fluorescence light in tissue evaluation and guide to biopsy.

However, contradictions are present within the paper that are characterized early in the paper by the authors indicating use of the light source as "adjunctive" tool when in the final analysis statement within the Conclusions the authors provide the suggestion of no biopsy following fluorescence imaging if the imaging is negative. The authors state that their results suggested that a "no biopsy strategy" when lesions assessed with tissue fluorescence should in the end, make them and their patients comfortable without biopsy is simplistic, given the low specificity of the technique. Limitations of this report included the use of the light source within the study by specialists, while in many locations intense marketing is directed to the general practice community for dental providers with less training and experience with analysis of mucosal abnormalities and in low risk populations, while this study was performed at a referral center by specialists.

In addition, pathologic analysis was not rigorous as described in this study. Histological diagnosis is at least in part subjective and this study did not state that two pathologists reviewing the biopsy results were blinded to each other's results in addition to what the protocol was when lack of concurrence between the pathologists occurred. Studies can account for this subjective challenge in histological diagnosis by blinded pathologists and a third opinion for adjudication when the first two pathologist's diagnoses are not the same.

The stated low specificity statistics concerning the large number of lichen planus cases within the study versus dysplastic/malignant lesions is of significance and may actually result in performance of greater numbers of biopsy procedures which, as stated by the authors, could lead to further patient anxiety, increased costs and potential surgical morbidity. Additionally, no mention is made to the possible progression of "low risk' lesions based upon fluorescence criteria that are not biopsied possibly leading to a perceived or false sense of security if no further follow-up analysis is undertaken (false negative results), which is potentially of greater impact than the potential of false positive results which may lead to increased numbers of biopsies.

Several recent well-conducted studies which have addressed potentially malignant oral lesions assessed with autofluorescence imaging with results ranging from no help in discriminating or separating benign and inflammatory lesions from potentially malignant, premalignant and malignant lesions [1,2]. At best, one study weakly supported the use of light based technology by specialists, on one hand, but also called attention to the significant degree of positivity in erythematous benign inflammatory conditions, thus false positive registration [3]. Furthermore, once identified we remain unable to predict behavior of persisting oral potentially malignant lesions [4] and dysplastic lesions.

The resultant practical usefulness of this technology in the hands of specialists remains as an adjunctive one only in the typical clinical setting as stated by the authors in the introduction of the submission. Care must be extended when reviewing these results in guiding any major clinical decision which may lead to progression of undetected oral potentially malignant lesion and dysplastic lesions. Tissue biopsy with histological evaluation remains the gold standard in establishing diagnosis and determining overall management of oral potentially malignant mucosal abnormalities. These issues may be of even greater concern in lower risk populations in general practice environments and primary care settings such as in general dental practice, where the health care provider is less experienced in assessing and managing oral lesions.

We encourage additional studies in community settings and in general patient populations as well as in higher risk populations. Study outcomes should also be assessed in enriched populations, such as patients with tobacco and betel habits, excessive consumption of alcohol, immunosuppressed populations, patients with a family or personal history of upper aerodigestive tract cancer and patients with potentially premalignant lesions. Seeking adjuncts and diagnostic tools that may enhance differentiation between common inflammatory lesions, potentially malignant oral lesions, dysplastic and neoplastic lesions is needed [3]. Current evidence does not support more than an adjunctive role for currently available adjunct devices [4].

Fluorescence imaging has been shown to support clinical decision making in diagnosed oral SCC in determining margins and guide surgical care [5] and possibly in higher risk patients in referral/specialist

practice.

Clinical practice guidelines have been developed by the American Dental Association, which does not support "screening" using fluorescence imaging for evaluation of potentially malignant disorders [6]. We do not support a "no biopsy" approach based upon fluorescence imaging assessment in the face of clinically suspicious lesions and specifically in general patient populations in primary care settings. In these settings it is expected that false positive and false negative rates may be increased. Caution is urged.

Declaration of Competing Interest

The authors reports no conflicts of interest.

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