LESION-DIRECTED SCREENING TO OPTIMIZE SKIN CANCER DETECTION IN THE GENERAL POPULATION:

TOOLS TO OPTIMIZE PRESELECTION

Lieve Brochez – Dermatologie UZ Gent

Introduction

The overall rising skin cancer incidence and sensitization campaigns such as Euromelanoma and other media attention increases skin cancer awareness but also anxiety in the general population. As a result, the low-risk population consults dermatologists for yearly total skin examinations further increasing waiting lists.

Early detection of skin cancer is still a major challenge in dermatology practice today. Surveillance in high-risk groups (history of skin cancer, genetic predisposition, immunosuppression) is common practice and a substantial amount of time in dermatology practice may be spent on this. Although these groups have a high relative risk, they do not necessarily make the highest contribution to the absolute numbers of skin cancer in the total population. Mackie et al. reported a positive personal history in 2.5% and family history in 5-11% of patients diagnosed with melanoma.(1,2) So, there is a need for other strategies to detect skin cancer in the general population. Several population-based skin cancer screenings have been studied. Although melanomas were found to be thinner when diagnosed through screening(3–5), a systematic total body screening in the general population is considered not cost-effective with reported skin cancer detection rates of 1 to 2%, and melanoma detection rates of 0.5% at maximum.(6,7)

In the past we demonstrated that detection rates and cost-effectiveness of a lesion-directed screening (LDS) were not inferior to that of a total body examination (TBE).(8) In addition the LDS was at least 5 times faster than TBE, and an additional TBE did not add much value if the index lesion was benign. In a more recent study we organized an LDS early access consultation at the dermatology department of the University Hospital Gent (manuscript accepted for JEADV). Patients calling the department of dermatology at the University Hospital Ghent, concerned about 1 or 2 lesions meeting at least one of the preset criteria (changed mole, new mole in an adult, ugly duckling mole, non-healing or rapidly growing lesion, or advised/referred by a non-dermatologist), were selected by the dermatology reception for consultation within one week.

Past project

In a series of 342 patients presenting to this consultation there was a minimum skin cancer detection rate of 13.2% (melanoma 4.1%). Detection rates were even higher if patients were referred by another doctor (skin cancer detection rate of 23.6% (melanoma 9%)) or in patients with a skin cancer history (detection rate of 24.3% (melanoma 4.3%)). However in patients without referral and with a negative skin cancer history detection rates were still at least 3 fold higher than reported in population-based screenings (detection rate of 7.7% (melanoma 1.7%)). Importantly anxiety of skin cancer dropped significantly after the consultation in case of a non-suspicious lesion indicating the value of this consultation for the patient even if the lesion was benign (fig 1). In addition anxiety also decreased significantly in case of a suspicious lesion probably as a result of appropriate information and immediate action. Additional TBE in patients presenting with a benign index lesion had low additional skin cancer detection rate (0.5%) and a high number of unnecessary excisions (13 for 1 relevant lesion) as opposed to patients with a suspicious index lesion in whom an additional TBE led to an additional detection of 8.9% skin cancers with low unnecessary excisions (9 excisions for 7 malignant lesions). This study was sponsored by an innovation fund of Ghent University Hospital.

In conclusion we believe that - in addition to surveillance programs in high-risk groups - a lesion-directed screening may be a way to optimize early detection of skin cancer and skin cancer anxiety in the low-risk population. In addition, it is a way to optimize waiting lists in dermatology practice.

Future Project

Objectives & target group**:** It is our goal to further study tools that can be offered to the low-risk general population that assist in making an even better preselection of lesions that require urgent dermatological consultation. These tools could include teledermatology/teledermoscopy at GP practices and the use of AI based systems like smartphone apps that could be used by the patients. It is our aim to clinically validate the performance of such tools and how these can affect worry by the patient.

Content:

- A teledermatology project has been started in collaboration with 4 GP practices to preselect lesions for urgent referral
- The performance of the Skinvision app – which is already available to the broad public- is tested in the setting of the LDS early access consultation.

The aim is to optimize early detection of skin cancer and reduce anxiety around specific lesions in the general population that is not under systematic dermatological follow-up (low-risk).

Preliminary results:

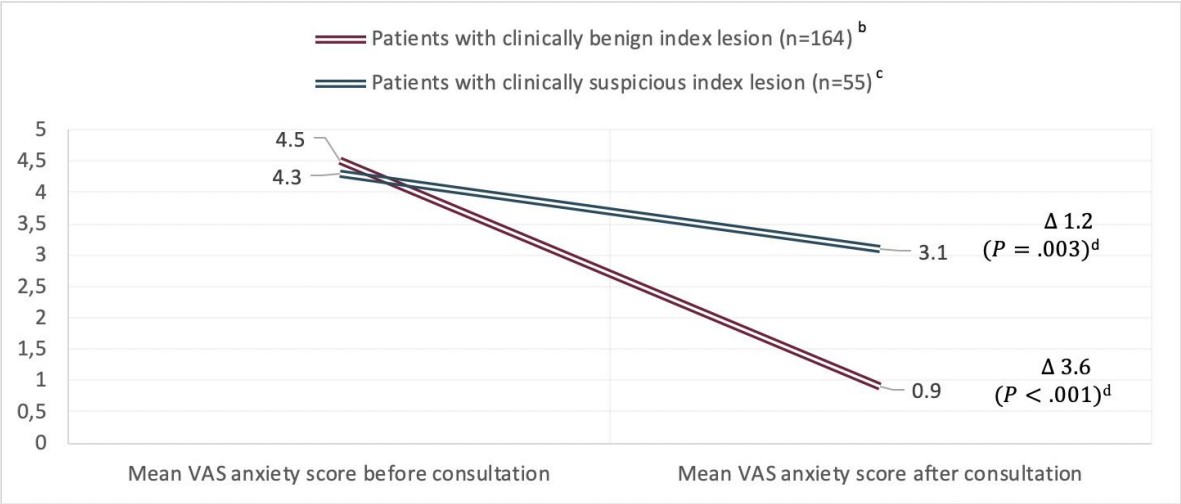
Up to date 88 patients have been included in an LDS teledermoscopy study in collaboration with 3 GP's. Anxiety that the lesion(s) might be skin cancer is measured before and after teleconsultation and for the moment available for 58 of 88 patients. With a mean difference of 2.2 points, fear for skin cancer decreased significantly after receiving advice from the teledermatologist compared to the anxiety before teleconsultation (From 3.6 to 1.4; Wilcoxon matched-pairs signed-ranks test; P<0.001). Furthermore, 9 in 10 patients indicated they would visit the GP more often regarding lesions of concern if teledermatology would be available in the GP practice.

Testing the Skinvision app in our department in 100 patients attending the triage consultation with 1 or 2 specific lesions, revealed a specificity of 93.4% and a sensitivity of 82% at interim analysis. Further study in a larger number of patients will reveal the performance of this app in the low-risk population. We will also investigate the reproducibility of the app in specific lesions, and factors that may influence the performance of the app.

We will compare preselection by telephone triage, teledermoscopy and the app, and measure the effect of the advice on anxiety scores of the participants.

APPENDIX

Figure 1



Legend: The Visual Analogue Score (score ranging from 0 (no anxiety) to 10 (worst anxiety ever)) for anxiety for having skin cancer was obtained before and after consultation.;

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