Diagnostic reliability of a store-and-forward teledermatology consult system for GPs

INTRODUCTION

The use of teledermatology in primary care offers the possibility of applying specialist dermatological knowledge to patients from a distance without the need of a traditional face to face consultation. Teledermatology has the potential of decreasing referrals, improving access and optimising the use of scarce dermatology resources. Nevertheless, the increasing use of teledermatology should be based on the demonstration of a favourable diagnostic reliability of the new diagnostic technique.

AIM: To evaluate the diagnostic agreement between a store-and-forward teledermatology consult system and the conventional dermatology consultation.

METHODOLOGY

- A prospective non-randomised pilot study was conducted from March 2009 to May 2010 at the Dermatology Department of a tertiary hospital and a primary healthcare centre in the Basque Country.
- A total of 225 consecutive patients with 228 skin lesions were diagnosed by means of both, a teledermatology consult system and conventional dermatological examination.
- The clinical history, demographic data and digital photographs were obtained by the GPs and sent for teleconsultation via the teledermatology system.
- The patients were then seen by a dermatologist in person and the final diagnosis was made.
- Agreement between the diagnosis was assessed.

RESULTS

<table>
<thead>
<tr>
<th>Percentage of cases</th>
<th>Skin lesion categories diagnosed during the study:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Miscellaneous skin lesions</td>
<td>N = 256 skin lesions</td>
</tr>
<tr>
<td>2 Melanocytic nevus*</td>
<td>33.5%</td>
</tr>
<tr>
<td>3 Seborrheic keratosis*</td>
<td>20.3%</td>
</tr>
<tr>
<td>4 Eczema*</td>
<td>16.3%</td>
</tr>
<tr>
<td>5 Inflammatory dermatitis*</td>
<td>15.0%</td>
</tr>
<tr>
<td>6 Skin cancer*</td>
<td>7.9%</td>
</tr>
<tr>
<td>7 Premalignant lesions*</td>
<td>3.8%</td>
</tr>
<tr>
<td>8 Benign tumours*</td>
<td>2.2%</td>
</tr>
<tr>
<td>9 Miscellaneous skin lesions</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

* Skin lesion categories assessed (number of lesions diagnosed):
1. Melanocytic nevus (46)
2. Seborrheic keratosis (37)
3. Eczema (34)
4. Inflammatory dermatitis (18)
5. Skin cancer (8)
6. Premalignant lesions (5)
7. Benign tumours (3)

Agreement results:
- Percentage of agreement: 73.6% (CI 95%: 67.5%-78.9%)
- Kappa index*: $\kappa = 0.844$ (CI 95%: 0.775-0.913)
- Overall Kappa index: $\kappa = 0.731$ (CI 95%: 0.664-0.798)

* Kappa index calculated for the seven pre-established skin lesion categories.

CONCLUSIONS

- Our results show that teledermatology is a highly reliable diagnostic tool with kappa values reflecting an excellent diagnostic agreement between conventional face to face examination and teleconsultation.
- Store-and-forward teledermatology could be a useful tool for rapid diagnosis of low complexity skin lesions from primary healthcare units.
- However, in addition to the reliability assessment, other important aspects such as, patient satisfaction and the acceptance of the new technology by general practitioners and dermatologist should be taken into consideration prior to the large scale diffusion of teledermatology in the health care system.