RECOGNITION OF ACTINIC KERATOSIS. A RETROSPECTIVE BIOPSY STUDY OF THE CLINICAL DIAGNOSTIC ACCURACY BY PRIMARY CARE PHYSICIANS COMPARED WITH DERMATOLOGISTS. EXPERIENCE IN MEXICO

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Abstract

Background. Actinic keratoses (AK) are dysplastic keratinocytic lesions confined to the epidermis. Currently, the standard screening method for detecting AK is performed by a health professional.

Objectives. We seek to determine if there were differences in diagnosis of AK by dermatologists (DL) and primary care physicians (PCP) in Mexico.

Material and Methods. The clinical diagnoses of PCP and DL were correlated with histopathologic diagnoses. In total, 285 cases were analyzed.

Results. DL diagnosed 90% (256/285) of the cases compared with 36% (102/285) of PCP (P=0.001). Primary care physicians were the group with the lowest diagnostic accuracy rate.

Conclusion: Primary care physicians need to acquire sufficient knowledge of basic dermatology as well as dermatopathology. The overall accuracy of the clinical diagnosis, mainly in hyperplastic AK, depends on the clinicopathologic correlation.

Key words: actinic keratosis; clinicopathologic correlation; dermatologist; diagnostic accuracy; primary care physician

Introduction

Actinic keratoses (AK) are dysplastic keratinocytic lesions confined to the epidermis, which are caused by ultraviolet radiation and are one of the most common reasons for patients to consult a dermatologist, with an estimated prevalence of 7.2
million in 1993-1994 in the United States [1] and increasing to 39.5 million in 2004. [2] Lesions are treated mainly for preventing reasons (malignancy), however AK are also treated for cosmetic and symptomatic purposes. [2,3] Currently, the standard screening method for detecting AK is performed by a health professional (DL detect 83.2% of the patients with AK). [4] Unfortunately, many medical professionals other than DL may not be specifically trained in the detection of AK. [5-8].

We were interested to determine whether there are differences in diagnosis of AK by DL and primary care physicians (PCP) in Mexico.

**Methods**

In this retrospective study, we retrieved and reviewed the records of skin biopsy specimens submitted to the Dermatopathology department at the Hospital General de México, from June 2006 through June 2010. We will use the term “skin biopsy” as a comprehensive designation of various techniques employed to obtain specimens, as punch and excisional biopsy methods. The histopathological diagnosis was made by 2 Mexican certified dermatopathologists and was compared with the clinical data submitted by the clinician (PCP and dermatologist). All records represent slides with hematoxyllin-eosin-stained sections derived from archival material.

**Data retrieval**

A total of 285 skin specimens were submitted in the examined time frame by 38 physicians (35 PCP and 3 DL). No repeat excision specimens, in which the diagnosis was known, were enrolled in this study.

**Comparison between clinical and histopathological diagnoses**

Using the histopathological diagnosis as the “gold standard”, we recorded a clinical diagnosis as correct, if the clinician listed several alternatives (eg. squamous cell carcinoma/AK/seborrheic keratosis) and AK was confirmed histopathologically. On the other hand, if only one clinical diagnosis was listed (eg. squamous cell carcinoma) and histopathologically the lesion represented another entity (eg. AK), the clinical diagnosis was considered incorrect.

<table>
<thead>
<tr>
<th>Type of actinic keratoses</th>
<th>n= 285 (%)</th>
<th>Correct diagnoses PCP/DL (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinic keratosis not specified.</td>
<td>220 (77)</td>
<td>94 (43)/207 (94)</td>
<td>0.001</td>
</tr>
<tr>
<td>Hyperplastic</td>
<td>53 (18)</td>
<td>6 (11)/41 (77)</td>
<td>0.001</td>
</tr>
<tr>
<td>Atrophic</td>
<td>5 (2)</td>
<td>0 (0)/3 (60)</td>
<td>NS</td>
</tr>
<tr>
<td>Bowenoid</td>
<td>3 (1)</td>
<td>0 (0)/2 (67)</td>
<td>NS</td>
</tr>
<tr>
<td>Pigmented</td>
<td>2 (1)</td>
<td>2 (100)/2 (100)</td>
<td>NS</td>
</tr>
<tr>
<td>Acantholytic</td>
<td>1(0.5)</td>
<td>0 (0)/0 (0)</td>
<td>NS</td>
</tr>
<tr>
<td>Lichenoid</td>
<td>1 (0.5)</td>
<td>0 (0)/1 (100)</td>
<td>NS</td>
</tr>
</tbody>
</table>

PCP = Primary care physician. DL = Dermatologist
NS = Non significative

Table 1. Distribution of actinic keratoses types and percentage of correct diagnoses

### Statistic analysis

DL and PCP were compared with respect to the frequency of correct diagnoses using the \( \chi^2 \) test of association. Alternatively, Fisher’s exact test was used when frequencies or group sizes made \( \chi^2 \) test results questionable (expected values less than 5). Percentages reported in the text are accompanied by 95% confidence intervals with the lower and upper limits in parenthesis. \( P \) values less than .05 are deemed statistically significant.

**Results**

The distribution of all AK types and the percentages of correct clinical diagnosis are shown in table 1.

We observed that the most commonly reported type of AK was the hyperplastic type (53/285, 18%), however, several case charts were not classified as well (220/285, 77%). The biopsy method mostly preferred for AK by DL was punch biopsy technique (245/285, 86%). Forty seven hyperplastic AK (89%) were clinically mistaken with squamous cell carcinoma by PCP, versus 12 (23%) in the dermatologist group (\( p=.001 \)). When analyzing all lesions combined, DL diagnosed 90% (256/285) compared with 36% (102/285) of PCP (\( p=.001 \)). Primary care physicians were the group with the lowest diagnostic accuracy rate. Of interest was the large number of cases for which only one clinical diagnosis was provided by the clinician. Primary care physician provided only one diagnosis in 237/285 cases (83%), compared with 20% of cases by the DL (58/285) (\( p=.001 \)).
Discussion
Physician office visits for the diagnosis of AK and nonmelanoma skin cancer is increasing. [9-11] such
tendency is probably due to the heightened public
awareness of the prevalence of precancerous and
cancerous skin conditions. In 1997, 60 million of 703
million physician office visits in the United States were
for skin examinations. During 1993 and 1994, 13.5
million physician office visits were recorded for AK and
nonmelanoma skin cancer alone. [4] While most AK are
diagnosed and treated by DL, a smaller percentage of
cases are diagnosed and treated by other physician
groups, including PCP. [12]
In our retrospective study, we try to determine the
accuracy in clinical diagnosis of AK among DL and
PCP. The present investigation provides additional
information of the superior diagnostic capability of DL
versus PCP in the diagnosis of AK. Numerous
publications have documented a considerable disparity in
the clinical diagnostic accuracy of DL and nonDL for
even the most common diseases. [1,4-8,10,13,14] In the
current study, we compared the clinical diagnoses made
on patients that came to our consultation with the
histopathological diagnoses. The clinical diagnoses of a
total of 285 physicians referring cases to our
Dermatopathology department were evaluated.
Several previous studies reported on the accuracy of the
clinical diagnosis of DL or nonDL, or both, using the
histopathological diagnosis as the “gold standard”.
[4,5,10,14]

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We found that DL diagnosed the majority of cases
correctly compared with PCP. This can be explained by
several ways; the most important explanation is by the
different training requirements for DL, and their
experience in the management of skin diseases. In a
previous study, DL diagnosed 36% (97/270) of AK
correctly versus 22% (2/9) of diagnoses made by nonDL.
[5] In our study, PCP recognized only 36% (109/285) of
all AK, compared with 90% (256/285) of DL.
A limitation of this retrospective study is the use of the
clinical data from the charts of the patients and from the
pathology requisition form as a surrogate for clinical
diagnostic accuracy.
We conclude that PCP needs to acquire sufficient
knowledge of basic dermatology as well as
dermatopathology. This knowledge is a prerequisite to
diagnose (clinically and histopathological) and even treat
AK correctly. The overall accuracy of the clinical
diagnosis, mainly in hyperplastic AK, depends on the
clinicopathologic correlation. Several possible clinical
options should be proposed by the clinician, in order to
decrease the risk of diagnostic miscarriage and even
increase the usefulness of clinicopathological correlation.
Failures in those areas can directly and negatively impact
on physician care work and patient benefit.