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ORIGINAL ARTICLE

The Usefulness of High-Resolution Ultrasound in Detecting Invasive Disease in Recurrent Basal Cell Carcinoma After Nonsurgical Treatment☆

C. Hernández-Ibáñez,[a,*] M. Aguilar-Bernier,[a] R. Fúnez-Liébana,[b] J. del Boz,[a] N. Blázquez,[a] M. de Troya[a]

[a] *Servicio de Dermatología, Hospital Costa del Sol, Marbella, Spain*
[b] *Servicio de Anatomía Patológica, Hospital Costa del Sol, Marbella, Spain*

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Skin ultrasound;
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Abstract
Introduction and objectives: Accurate subtyping of basal cell carcinoma (BCC) is crucial for the effective management of this disease and it is particularly important to distinguish between aggressive and nonaggressive histologic variants. Histologic subtype is not always accurately identified by biopsy and this can have serious implications. High-resolution ultrasound (HRUS) is a recent technique that has proven to be of value in differentiating between variants of BCC. The aim of this study was to investigate the potential usefulness of HRUS for detecting invasive disease in recurrent BCC treated nonsurgically following an initial diagnosis of noninvasive BCC by biopsy.
Material and methods: This was a prospective observational study of consecutive cases of BCC with clinical suspicion of recurrence following nonsurgical treatment and a pretreatment diagnosis of superficial BCC by punch biopsy. Before surgical excision, the recurrent lesions were evaluated by HRUS followed by a punch biopsy of the site of suspected recurrence. The diagnostic agreement between HRUS, punch biopsy, and excisional biopsy was then evaluated.
Results: Eight lesions were studied. HRUS identified invasive disease in 3 of the 4 cases that were incorrectly classified as superficial subtypes by punch biopsy.
Conclusion: HRUS could be useful for detecting persistent tumor after nonsurgical treatment and for choosing the site most likely to harbor invasive disease for punch biopsy.

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* Corresponding author.
E-mail address: chernandez@aedv.es (C. Hernández-Ibáñez).

PALABRAS CLAVE
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Carcinoma basocelular

Utilidad de la ecografía cutánea en el diagnóstico de invasividad del carcinoma basocelular recurrente tras tratamiento no quirúrgico

Resumen
Introducción y objetivos: La determinación del subtipo histológico de carcinoma basocelular (CBC) es crucial en el adecuado abordaje del mismo (sobre todo diferenciar variantes agresivas de no agresivas). En ocasiones la biopsia falla en la correcta catalogación del mismo con sus conocidas consecuencias. La ecografía cutánea de alta frecuencia (ECAF) es una técnica reciente que ha mostrado potencialidad en la distinción de variantes de CBC. El objetivo del estudio fue mostrar la posible utilidad de la ECAF en la identificación de la invasividad del CBC recurrente tras tratamientos no quirúrgicos diagnosticados mediante biopsia como no invasivos.
Material y métodos: Estudio observacional, prospectivo de casos consecutivos de CBC con sospecha clínica de recurrencia tras tratamiento no quirúrgico y que previamente a dicho tratamiento habían sido diagnosticados por biopsia-*punch* como variantes superficiales. Previamente a la extirpación quirúrgica de los mismos se realizó una ecografía de la lesión y posteriormente un *punch* de la zona sospechosa de persistencia. Finalmente se estudió la tasa de concordancia entre los resultados diagnósticos de cada una de las pruebas (ECAF, biopsia-*punch* y biopsia escisional).
Resultados: Se incluyeron 8 casos. De entre los 4 casos en los que la biopsia-*punch* realizó una mala clasificación de invasividad (eran realmente subtipos invasivos pero la biopsia-*punch* determinó subtipos superficiales), la ECAF fue capaz de detectar dicha invasividad en 3 de ellos.
Conclusión: La ECAF podría ser de utilidad en la detección de persistencias tumorales de CBC tras tratamientos no quirúrgicos, permitiendo guiar la biopsia-punch en la detección del área más sospechosa de infiltración.

Introduction

Basal cell carcinoma (BCC) is the most common type of cancer in white people. Consequently, some authors have defined it as a health problem of epidemic characteristics that is associated with considerable health care spending.[1] Diagnosis has traditionally been based on punch biopsy, although this approach could lead to an erroneous histologic classification—aggressive subtypes classified as nonaggressive—with severe consequences for therapy and prognosis.[2–6] High-resolution ultrasound (HRUS) is a recent technique that is still being investigated and has proven to be of value in the diagnosis and management of BCC. The potential of HRUS has been evaluated mainly in the measurement of tumor dimensions and mapping of presurgical margins, and although differential ultrasound patterns have been reported for subtypes of BCC, this aspect has received less attention.[7–15] The objective of the present study was to show the potential usefulness of HRUS for identifying invasive disease in recurrent BCC after nonsurgical treatment of tumors diagnosed as noninvasive by biopsy.

Material and Methods

We performed an observational prospective study of consecutive cases of BCC with clinical suspicion of recurrence following nonsurgical treatment and a pretreatment diagnosis of superficial BCC by punch biopsy. The patients were seen at the Skin Cancer Clinic of the Department of Dermatology of Hospital Costa del Sol, Marbella, Spain between September 2012 and June 2013. The inclusion criteria were those set out above (ie, recurrent BCC after nonsurgical treatment that was not previously classed as noninvasive with biopsy), and the exclusion criteria were refusal or inability to undergo an ultrasound study after clinical evidence of recurrence.

The methodology applied was as follows: in cases of suspected residual BCC after nonsurgical treatment, the lesion was analyzed using HRUS (Dermascan C- 20 mHz [resolution $60 \times 200\,\mu m$], Cortex Technology). A punch biopsy was then performed of the portion that was clinically and dermoscopically suspected of invasiveness. The clinical and dermoscopic criteria for selection of the tumor area to be biopsied were that it had to present arborizing telangiectasias, brown-blue-gray ovoid nests, or ulceration.[16,17] The lesion was then surgically removed, and serial sections were taken for study. Finally, the diagnostic agreement of the results (invasive vs noninvasive) obtained by HRUS, punch biopsy, and excisional biopsy was compared.

In histologic terms, the superficial and the expansive/nodular variants of BCC were considered noninvasive, and the remainder were considered invasive.

Differential ultrasound patterns of subtypes were detected based on relevant publications.[8,9,15,18] Thus, the superficial subtype was defined as a heterogeneous, hypoechoic, flattened, solid tumor with irregular borders; the nodular subtype was similar to the superficial subtype, although it was oval in shape; the infiltrative subtype was described as having irregular hypoechoic bands that originate in the main tumor mass and invade the underlying dermis; and in the morpheaform subtype, increased