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ORIGINAL ARTICLE

Usefulness of High-Frequency Ultrasound in the Classification of Histologic Subtypes of Primary Basal Cell Carcinoma☆

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KEYWORDS
Ultrasound;
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Abstract

Introduction: Incisional biopsy may not always provide a correct classification of histologic subtypes of basal cell carcinoma (BCC). High-frequency ultrasound (HFUS) imaging of the skin is useful for the diagnosis and management of this tumor.

Objectives: The main aim of this study was to compare the diagnostic value of HFUS compared with punch biopsy for the correct classification of histologic subtypes of primary BCC. We also analyzed the influence of tumor size and histologic subtype (single subtype vs. mixed) on the diagnostic yield of HFUS and punch biopsy.

Methods: Retrospective observational study of primary BCCs treated by the Dermatology Department of Hospital Costa del Sol in Marbella, Spain, between october 2013 and may 2014. Surgical excision was preceded by HFUS imaging (Dermascan C©, 20-MHz linear probe) and a punch biopsy in all cases. We compared the overall diagnostic yield and accuracy (sensitivity, specificity, positive predictive value [PPV], and negative predictive value [NPV]) of HFUS and punch biopsy against the gold standard (excisional biopsy with serial sections) for overall and subgroup results.

Results: We studied 156 cases. The overall diagnostic yield was 73.7% for HFUS (sensitivity, 74.5%; specificity, 73%) and 79.9% for punch biopsy (sensitivity, 76%; specificity, 82%). In the subgroup analyses, HFUS had a PPV of 93.3% for superficial BCC (vs. 92% for punch biopsy). In the analysis by tumor size, HFUS achieved an overall diagnostic yield of 70.4% for tumors measuring 40 mm^2 or less and 77.3% for larger tumors; the NPV was 82% in both size groups. Punch biopsy performed better in the diagnosis of small lesions (overall diagnostic yield of 86.4% for lesions $\leq$ 40 mm^2 vs. 72.6% for lesions > 40 mm^2).

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Conclusions: HFUS imaging was particularly useful for ruling out infiltrating BCCs, diagnosing simple, superficial BCCs, and correctly classifying BCCs larger than 40 mm^2.

PALABRAS CLAVE
Ecografía;
Carcinoma basocelular

Utilidad de la ecografía cutánea en la clasificación de subtipos de los carcinomas basocelulares primarios

Resumen

Introducción: La biopsia incisional puede fallar en la correcta catalogación de subtipos histológicos de carcinoma basocelular (CBC). La ecografía (ECO) cutánea es una herramienta diagnóstica útil en el diagnóstico y manejo de este tumor.

Objetivos: El objetivo principal fue evaluar la utilidad diagnóstica de la ECO frente a la biopsia punch en la correcta clasificación del patrón histológico de infiltración de los CBC primarios. Los objetivos secundarios fueron: evaluar si el rendimiento diagnóstico de la ECO frente a la biopsia incisional guardaba relación con el tamaño tumoral y con formas de CBC simples frente a formas mixtas.

Métodos: Estudio observacional prospectivo de los casos de CBC primarios atendidos en el Servicio de Dermatología del Hospital Costa del Sol (Marbella) entre octubre de 2013 y mayo de 2014. Previamente a la extirpación quirúrgica se realizó una ECO cutánea (Dermascan C©, sonda lineal, 20 Mhz) y una biopsia punch. Se valoró el porcentaje de acuerdo absoluto y rendimiento diagnóstico (sensibilidad, especificidad, valor predictivo positivo [VPP] y valor predictivo negativo [VPN]) para resultados globales y parciales entre ECO y punch frente al gold estándar (biopsia escisional por cortes seriados).

Resultados: Se incluyeron 156 casos. La tasa de concordancia diagnóstica global de la ECO fue del 73,7% (sensibilidad: 74,5%, especificidad: 73%) vs. 79,9% (sensibilidad: 76%, especificidad: 82%) para el punch. En el análisis individual destaca para el CBC superficial un VPP para la ECO del 93,3% frente al 92% para el punch. En el análisis por tamaño tumoral la ECO incrementó el porcentaje de acuerdo absoluto del 70,4 al 77,3% (área $\leq$ 40 mm^2 vs. área > 40 mm^2) manteniendo el VPN constante para ambos subgrupos (82%). Para la biopsia punch, el porcentaje de acuerdo absoluto pasó del 86,4 al 72,6%.

Conclusiones: La ECO cutánea muestra una especial utilidad para descartar la presencia de invasividad, para el diagnóstico de formas superficiales simples y para la correcta catalogación de CBC de área mayor a 40 mm^2.

Introduction

Basal cell carcinoma (BCC) is the most common cancer in the white population. Patients are increasingly young, and the rise in incidence, together with the enormous associated health care costs,[1] calls for new diagnostic techniques that are fast, reliable, and affordable.

Incisional biopsy (generally punch biopsy) is used to confirm a diagnosis of BCC. However, this technique only targets a limited fragment of the tumor and it may fail to correctly classify histologic subtypes. There have been reports of aggressive subtypes being classified as nonaggressive following incisional biopsy. This is more frequent in mixed or large BCCs, where there is a greater chance of missing the most aggressive part of the tumor.[2–6] Incorrect classification of histologic subtype can result in inappropriate treatment, increased recurrence rates, and higher costs.[2–6]

High-frequency ultrasound (HFUS) imaging of the skin is gaining increasing recognition as a first-line diagnostic tool for the diagnosis and management of BCC.[7–9] Most studies in this area have highlighted its usefulness for estimating tumor size and mapping out presurgical margins.[10–18] However, its role in identifying differential BCC subtype patterns has received considerably less attention and has only been analyzed in small series.[9,10,19] Compared with skin biopsy, HFUS has the advantage that it provides an overall vision of the tumor and can therefore potentially distinguish between noninvasive and potentially invasive areas.

The main aim of this study was to compare the diagnostic value of HFUS and punch biopsy for the correct classification of histologic subtypes of primary BCC. A secondary aim was to investigate whether the diagnostic yield of HFUS versus incisional biopsy was related to tumor size and type (simple vs. mixed).

Material and Methods

We performed a prospective observational study of consecutive cases of primary BCCs referred from primary care to the Dermatology Department at Hospital Costa del Sol in Marbella, Spain between October 2013 and May 2014.