Value of Ultrasound as a Diagnostic Tool for a Painful Thoracic Nodule☆

Utilidad de la ecografía en el diagnóstico diferencial de un nódulo doloroso en el tórax

To the Editor:

The clinical diagnosis of painful nodules is difficult owing to the absence of specific clinical characteristics and the large number of differential diagnoses.[1] High-resolution Doppler ultrasound (HRDU) is a very valuable tool for the diagnosis and follow-up of multiple neoplastic, vascular, and inflammatory skin diseases.[2]

We report the case of a young patient with a painful nodule on the trunk in which HRDU proved useful for evaluation and differential diagnosis.

Case Description

A 35-year-old man with no relevant medical history consulted for a painful lesion on the left hemithorax that had first appeared 4 months earlier. The lesion grew slowly, and the pain increased over the last 2 months.

Physical examination revealed a poorly defined and slightly bluish area on the left hemithorax located anteriorly to the axillary midline and a small, soft, mobile, and tender nodule that was difficult to palpate. Dermatoscopy revealed a central blue-violaceous area surrounded by an erythematous halo (Fig. 1A).

HRDU with a 22-MHz probe (MyLab Class C, Esaote) revealed a well-defined anechoic image in the dermis and hypodermis. The image was round in the longitudinal plane and polylobulated in the transverse plane. It was 4.2 mm thick and had an internal septum measuring 11.9 mm on the transverse axis and 5.9 mm on its longitudinal axis. Posterior enhancement was observed. Power Doppler mode revealed sparse intralesional vascularization, with low-flow venous and arterial vessels measuring 0.2 to 0.4 mm in diameter; spectral Doppler mode revealed that the arterial vessels had a maximum systolic peak of 2.2 cm/s (Fig. 2). The ultrasound characteristics led us to suspect a benign subcutaneous tumor or hematoma. However, given the time since onset and the patient's symptoms, the tumor margins were determined using ultrasound, and the lesion was surgically removed.

Histology revealed a well-defined densely cellular tumor in the dermis composed of 2 cell types: small and intensely basophilic cells arranged around other large, pale cells that clustered to form ductal structures (Figs. 1B and C). These findings were compatible with a diagnosis of eccrine spiradenoma.

Discussion

Eccrine spiradenoma is an uncommon, generally benign tumor that originates in the eccrine sweat glands. It generally presents on the trunk of young adults as a single tumor that tends to be painful. The skin may take on a bluish or erythematous tone, as in the present case. Histologically, the tumor is characterized by well-defined nodules with intense cellularity and 2 cell populations: an external population comprising small cells with hyperchromatic nuclei, and an internal population comprising large, pale cells.[3]

The differential diagnosis of eccrine spiradenoma is very broad and includes inflammatory dermatosis, tumor, and metastasis.[1] HRDU can be of value in diagnosis. In the few studies where eccrine spiradenoma has been assessed with ultrasound, the tumor is described as a well-defined hypoechoic or anechoic lobulated image in the dermis or hypodermis, with variable vascular flow and generally peripheral vascularization.[3–5] Its location in the

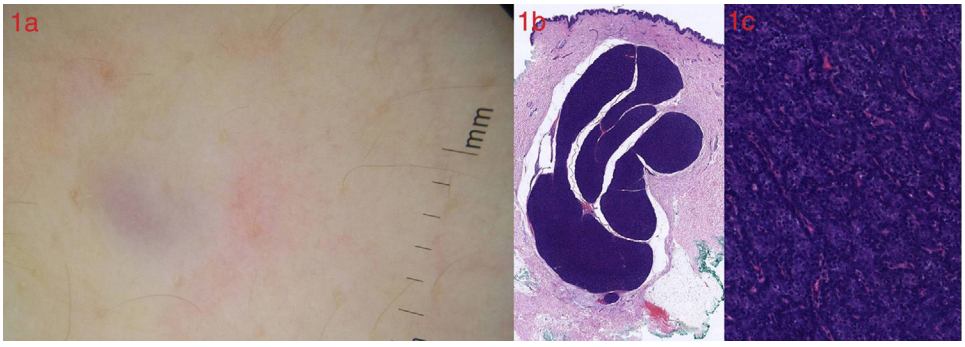

Figure 1 A, Dermatoscopy (DermLite II Pro HR, 3 Gen): central blue-violaceous area surrounded by an erythematous halo. B, Well-differentiated polylobulated tumor in the dermis (hematoxylin-eosin, original magnification × 2). C, The tumor is composed of a biphasic epithelial proliferation comprising small cells arranged around cells with more abundant and clearer cytoplasm that forms ductal structures. No atypia or mitosis is visible (hematoxylin-eosin, original magnification × 20).

☆ Please cite this article as: Morgado-Carrasco D, Gómez S, Alós L, Giavedoni P. Utilidad de la ecografía en el diagnóstico diferencial de un nódulo doloroso en el tórax. Actas Dermosifiliogr. 2018;109:570–573.

Table 1 Differential Diagnosis and Ultrasound Characteristics of Painful Dermal-Hypodermal Lesions.

	Location	Ultrasound Characteristics in M Mode	Characteristics in Color Doppler Mode
Dermatofibroma	Dermis	Anechoic or hypoechoic heterogenous and poorly defined oval image	No increased vascularization
Epidermal cyst	Dermis-hypodermis	Anechoic or hypoechoic round well-defined image. May present bright echoes in its interior (keratin or cholesterol deposits). Posterior enhancement and lateral acoustic shadows. The punctum (hypoechoic tract connected with the epidermis) is visible.	No increased vascularization, except for inflammation or rupture
Trichilemmal cyst	Dermis or hypodermis	Well-defined round anechoic or hypoechoic image. Linear hyperechoic structures are visible in the interior (follicular debris or calcifications)	Scarce peripheral vascularization
Pilomatricoma	Dermis or hypodermis	Well-defined round images with calcifications in the interior, hypoechoic halo on the periphery, posterior acoustic shadow	Abundant peripheral or internal vascularization
Hidrocystoma	Dermis	Well-defined anechoic oval lesion with posterior enhancement. Can compress adjacent muscles	No increased vascularization
Eccrine spiradenoma	Dermis-hypodermis	Well-defined anechoic or hypoechoic lesion that may be polylobulated, with posterior enhancement	Increased peripheral vascularization
Schwannoma	Dermis-hypodermis	Heterogeneous well-defined anechoic or hypoechoic lesion. Afferent or efferent pathways may be observed	Generally no increased vascularization
Metastasis	Dermis-hypodermis	Well-defined hypoechoic or anechoic lesion that may present posterior enhancement	Increased vascularization
Glomus tumor	Hypodermis	Well-defined hypoechoic lesion	Moderate or abundant vascularization in the interior of the tumor
Leiomyoma	Hypodermis	Heterogeneous, hyperechoic, and well-defined image, with a thick capsule that may present calcifications and septa in the interior	Moderate intratumoral vascularization
Neuroma	Hypodermis	Round or oval, generally well-defined hypoechoic lesion	Generally hypovascular
Endometrioma	Hypodermis	Hypoechoic round or oval poorly defined nodular lesion with a hyperechoic halo	Scarce intratumoral vascularization
Angiolipoma	Hypodermis	Heterogeneous, well-defined hyperechoic lesion	Scarce to moderate intratumoral vascularization

Source: Echeverría-García et al.,[2] Jin et al.,[3] Wortsman,[6] Stock et al.,[8] and Savelli et al.[7]

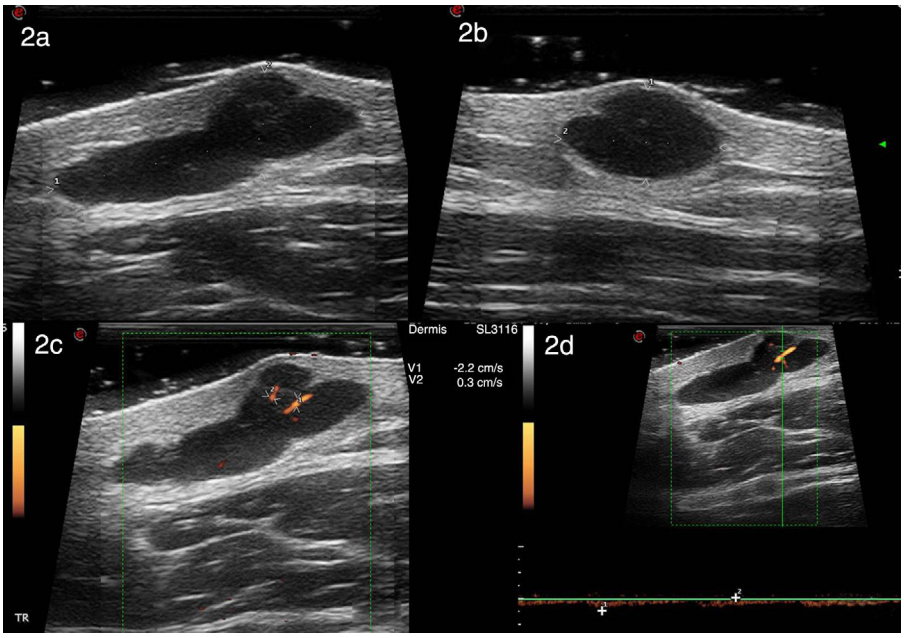

Figure 2 High-resolution ultrasound with a 22-MHz probe (MyLab class C, Esaote) reveals a well-defined polylobulated anechoic image with an internal septum located in the dermis and hypodermis. Positive enhancement was observed. The image measured 11.9 mm along its transverse axis (A) and 5.9 mm along its longitudinal axis (B). Power Doppler revealed sparse intralesional vascularization with arterial and venous vessels measuring between 0.2 and 0.4 mm in diameter (C). Spectral Doppler showed that the arterial vessels had a maximum systolic peak of 2.2 cm/s (D).

dermis-hypodermis enables ultrasound to rule out other painful nodules such as angiolipomas, neurofibromas, neuromas, schwannomas, glomus tumor, endometriomas, and leiomiomas,[1] which are generally found in subcutaneous cellular tissue (Table 1).[2,6–8] The ultrasound-based differential diagnosis should be performed with potentially painful lesions in the dermis-hypodermis such as epidermal cysts, trichilemmal cysts, pilomatricoma, dermatofibroma, hidrocystoma, and schwannoma, without forgetting cutaneous metastases (Table 1).[2,6] It is essential to assess the vascularization of the lesion using Doppler mode, which may help to rule out malignancy with high specificity and sensitivity.[9]

Curiously, despite being a solid tumor, eccrine spiradenoma may appear as a cystic lesion on ultrasound. Preliminary data suggest that various tumors such schwannomas, leiomyomas, dermatofibromas, dermatofibrosarcoma protuberans, histiocytomas, and eccrine spiradenoma, all of which appear as solid tumors in histopathology, may occasionally present anechoic patterns, with posterior enhancement and even absence of flow in color Doppler. They may also be confused with cysts, thus potentially leading to an erroneous diagnosis.[5] The incidence of solid tumors with cystic ultrasound characteristics was 5% in a series of 430 cases.[5] Lange et al.[10] believe that this could be explained by the histological characteristics of the lesion: the more homogeneous and dense the cell population is, the more likely the lesion is to present as homogeneous, well-defined, and hypoechoic, with posterior enhancement.

In the case we report, HRDU enabled us to identify an uncommon tumor, eccrine spiradenoma, which is difficult to diagnose. A broad spectrum of tumors, including eccrine spiradenoma, may present clinically as painful nodules and on ultrasound as cysts or pseudocysts. It is essential to evaluate these lesions in both planes, with and without compression, and to assess vascularization in Doppler mode in order to avoid diagnostic and therapeutic errors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Bibliografía

1. Naversen DN, Trask DM, Watson FH, Burket JM. Painful tumors of the skin: «LEND AN EGG». J Am Acad Dermatol. 1993;28:298–300.
2. Echeverría-García B, Borbujo J, Alfageme F. The use of ultrasound imaging in dermatology. Actas Dermosifiliogr. 2014;105:887–90.
3. Jin W, Kim GY, Lew BL, Yang DM, Kim HC, Ryu JK, et al. Sonographic findings of an eccrine spiradenoma: Case report and literature review. J Ultrasound Med Off J Am Inst Ultrasound Med. 2008;27:813–8.
4. Balaban M, Idilman IS, Unal O, Dumlu EG, Yazgan A, Ipek A. Sonographic and sonoelastographic findings of a rarely seen soft tissue tumor: Eccrine spiradenoma. J Med Ultrason. 2001 2015;42:587–90.
5. Lee MH, Kim NR, Ryu JA. Cyst-like solid tumors of the musculoskeletal system: An analysis of ultrasound findings. Skeletal Radiol. 2010;39:981–6.
6. Wortsman X. Common applications of dermatologic sonography. J Ultrasound Med. 2012;31:97–111.
7. Savelli L, Manuzzi L, Di Donato N, Salfi N, Trivella G, Ceccaroni M, et al. Endometriosis of the abdominal wall: Ultrasonographic

and Doppler characteristics. Ultrasound Obstet Gynecol Off J Int Soc Ultrasound Obstet Gynecol. 2012;39:336–40.
8. Stock H, Perino G, Athanasian E, Adler R. Leiomyoma of the foot: Sonographic features with pathologic correlation. HSS J Musculoskelet J Hosp Spec Surg. 2011;7:94–8.
9. Giovagnorio F, Andreoli C, de Cicco ML. Color Doppler sonography of focal lesions of the skin and subcutaneous tissue. J Ultrasound Med Off J Am Inst Ultrasound Med. 1999;18:89–93.
10. Lange TA, Austin CW, Seibert JJ, Angtuaco TL, Yandow DR. Ultrasound imaging as a screening study for malignant soft-tissue tumors. J Bone Joint Surg Am. 1987;69:100–5.

D. Morgado-Carrasco,[a] S. Gómez,[a] L. Alós,[b] P. Giavedoni[a,*]

[a] *Servicio de Dermatología, Hospital Clínic, Universitat de Barcelona, Barcelona, Spain*
[b] *Servicios de Anatomía Patológica, Hospital Clínic, Universitat de Barcelona, Barcelona, Spain*

* Corresponding author.
E-mail address: giavedonip@gmail.com (P. Giavedoni).
1578-2190/

Is Hutchinson's Sign Pathognomic of Subungual Melanoma?☆

¿Es el signo de Hutchinson patognomónico de melanoma subungueal?

To the Editor:

Longitudinal melanonychia is characterized by the presence of light to dark brown or black pigmentation of the nail plate. It occurs in individuals of certain racial origins, such as blacks, Latin Americans, and Asians, but it can also be induced by trauma or drug therapy or found in benign conditions such as infections and melanocytic lesions (e.g., nail apparatus lentigo and nevi). It is also a feature of subungual melanoma. Subungual melanoma is a rare malignancy that accounts for approximately 0.7% to 3.5% of all melanomas in the general population.[1] Dermoscopy is a useful tool for the differential diagnosis of longitudinal melanonychia.[2] One of the hallmark signs of subungual melanoma is the Hutchinson sign, which describes periungual pigmentation of the nail folds and hyponychium.[3,4] The sign has traditionally been associated with poor prognosis in subungual melanoma as it indicates radial growth. Not all Hutchinson signs, however, are associated with subungual melanoma. Some individuals may have a pseudo-Hutchinson sign, which refers to the presence of a dark pigment made visible through a translucent cuticle.[4,5] In addition, patients with benign melanocytic lesions, such as congenital nevi, may also have periungual pigmentation of the nail folds, raising suspicion of subungual melanoma[6–8] even though this tumor is very rare in the pediatric population.

Case Description

A 25-year-old woman presented with longitudinal melanonychia on her right index finger. The pigmentation had been present since the patient was 8 years old and had not changed in appearance. The patient had Fitzpatrick type III skin and the physical examination showed a dark brown band measuring 2 mm in width on the right index finger. There was also a notable Hutchinson sign (Fig. 1). The dermoscopic examination showed brown parallel bands along the length of the nail plate and the Hutchinson sign in the proximal and lateral folds (Fig. 2). An excisional biopsy of the nail matrix and affected folds showed a mildly acanthotic squamous epithelium with preserved epithelial maturation and epithelial melanosis in the basal layer, but no evidence of lentiginous melanocytic proliferation or melanocyte nests. Periodic acid-Schiff staining was negative and there were no signs of hemorrhage (Fig. 3). The findings were consistent with nail apparatus lentigo. The functional and cosmetic results after just a few months were satisfactory.

Discussion

Determining the benign or malignant nature of melanonychia is challenging and requires 3 steps, the first of which is to determine whether the pigment is melanin. If it is, the second step is to discover whether the increase in melanin is due to melanocytic activation or proliferation. Dermoscopically, gray homogeneous bands suggest activation, while

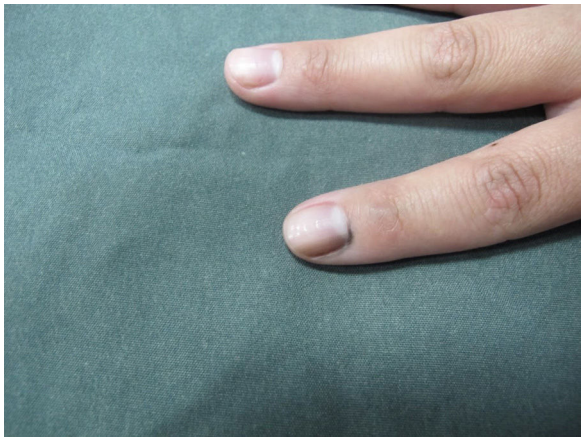

Figure 1 Clinical appearance: longitudinal melanonychia with periungual pigmentation (Hutchinson sign).

☆ Please cite this article as: Catalán V, Yagnam M, Morales C, Villagra M. ¿Es el signo de Hutchinson patognomónico de melanoma subungueal. Actas Dermosifiliogr. 2018;109:573–575.