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CASE AND RESEARCH LETTERS

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 dermis-hypodermis enables ultrasound to rule out other painful nodules such as angioliomas, neurofibromas, neuroromas, 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, hydrocystoma, 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

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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

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