

Usefulness of High-Frequency Ultrasound in the Diagnosis of Piezogenic Pedal Papules[☆]



Utilidad de la ecografía de alta frecuencia en el diagnóstico de las pápulas piezogénicas

Piezogenic papules are produced by the herniation of adipose tissue through the dermal connective tissue. They develop in up to 60% of the general population¹ and are caused by persistent excessive pressure; they are therefore most common in athletes (runners, jumpers, etc.), obese persons, and those who frequently carry heavy weights.² A high incidence has also been reported in patients with Ehlers-Danlos syndrome due to the disease-related weakness of the collagen.^{3,4} Presentation is usually as skin-colored papules or nodules on the lateral or posterior surfaces of the heels, although they have been described at less typical sites such as the wrists.^{5,6} Piezogenic papules are usually asymptomatic and are therefore an uncommon cause of consultation, leading to underestimation of their true prevalence. However, they may occasionally give rise to pain, typically due to the continuous friction with footwear.^{2,3}

The diagnosis of piezogenic papules is above all clinical, though atypical presentations may lead to a need to perform biopsy for histologic confirmation of the suspected diagnosis.¹ High-frequency ultrasound, ever more widely employed in dermatology,^{7,8} can be used to support the clinical diagnosis.

We present 2 cases, one of an obese 52-year-old woman with no other history of interest (Fig. 1A) and the other of a child aged 13 years who regularly practiced aikido (Fig. 2A). These cases help to illustrate the potential usefulness of ultrasound as a diagnostic tool for this condition. Both patients presented asymptomatic skin-colored papules of soft consistency on the medial surface of both heels. The papules measured 0.5 cm in diameter and became more prominent when the patients stood up. Despite the characteristic clinical presentation, ultrasound was performed to characterize the lesions sonographically. The ultrasound device (Esaote, MyLabClass C, Genoa, Italy) had a variable-frequency linear array transducer; the frequency for the test was 18 MHz, with a lateral resolution of 240 μ m. The patients were examined in a sitting position, with the knees flexed and the soles of their feet resting on the examination couch, rocking the body weight onto the feet to make the alteration more evident. In both cases, an area was observed that was isoechoic with the subcutaneous cellular tissue but was surrounded by the reticular dermis, producing posterior acoustic enhancement (Figs. 1B and 2B). No abnormal vascularization was observed in color Doppler mode. The ultrasound findings helped to confirm the suspected diagnosis of piezogenic papules. No further diagnostic tests or treatment were considered necessary.

These examples illustrate the possibility of using high-frequency ultrasound as an additional test for the diagnosis of piezogenic papules.

Cho et al.⁹ described similar ultrasound findings in 4 patients. As in the cases described by those authors, ultrasound study of the regions with a clinical suspicion of

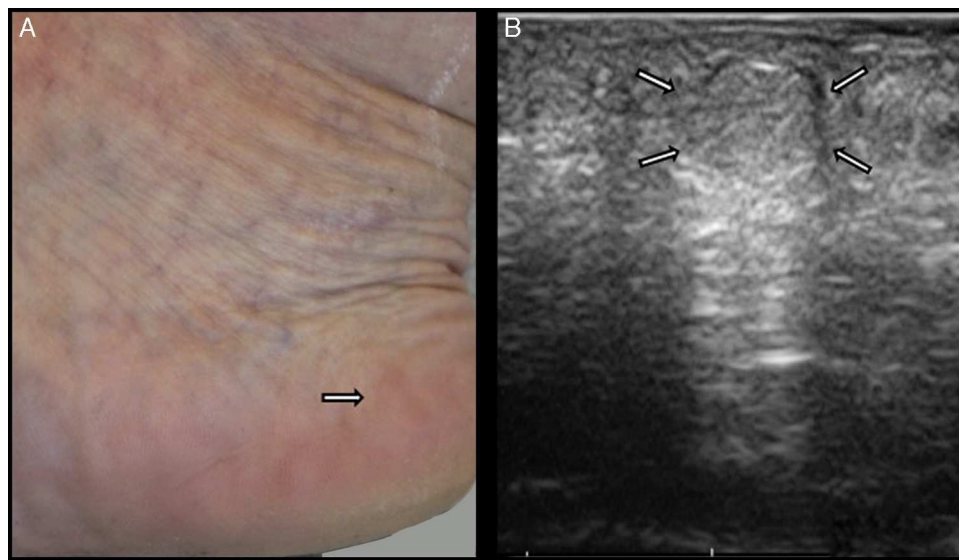


Figure 1 A, Clinical photograph of piezogenic papules in a 52-year-old woman, visible even without weightbearing. Small, round, skin-colored papules/nodules are present on the medial surface of the heel. B, Ultrasound image of a piezogenic papule. An area isoechoic with the underlying subcutaneous cellular tissue is observed within the reticular dermis. There is slight thickening of the dermis.

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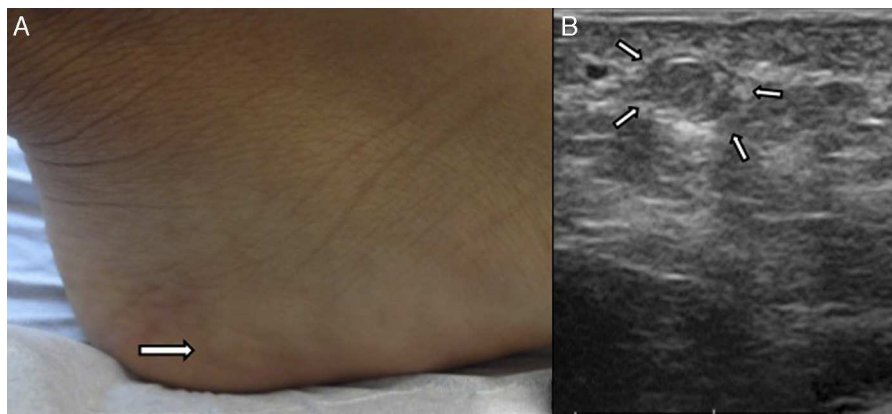


Figure 2 A, Clinical photograph of piezogenic papules in a 13-year-old girl. Small, round, skin-colored papules/nodules are visible on the medial surface of the heel. B, Ultrasound image of a piezogenic papule. A round hypoechoic area is observed in the dermis. This corresponds to a fat lobule surrounded by the reticular dermis.

piezogenic papules in our patients revealed areas within the reticular dermis that were isoechoic with the subcutaneous cellular tissue. Cho et al. explained that the ultrasound image may represent rupture of the interlobular septa adjacent to the reticular dermis and the coalescence of the most superficial fat lobules. In our patients, in contrast to the description by Cho et al., we observed posterior enhancement that could have been due to different ultrasound transmission by this area of subcutaneous cellular tissue compared with adjacent areas of the dermis. It should be noted that the device used by Cho et al. operated at a variable frequency of 5-12 MHz whereas, in our patients, we used a device with a linear array with a variable frequency of 16 to 22 MHz.

The clear delimitation of the lesion and the absence of abnormal vascularization within the lesions support their benign nature.¹⁰ The differential diagnosis should include other benign dermal or subdermal lesions such as lipoma, neurofibroma, and even benign vascular tumors such as a glomus tumor at an atypical site. On ultrasound, lipoma appears as a well-defined, elongated, hypo- or isoechoic area in the hypodermis, with its long axis parallel to the skin surface; it may contain hyperechoic striate lines, which represent the septa.^{11,12} Neurofibroma is described sonographically as a well or ill-defined nodular or pseudonodular lesion that is homogeneously hypoechoic or that may contain hyperechoic areas within a hypo- or anechoic mass, with a variable degree of vascularization.¹³ Plexiform neurofibromas, however, appear as hypoechoic and hypovascular tracts that follow the paths of nerves.¹³ Glomus tumor is seen as a small, solid, well-defined, hypoechoic nodule in the dermis, with abundant blood vessels visible on color Doppler mode.¹⁴

Apart from the study by Cho et al., we have found no other articles in the literature that have characterized piezogenic papules using high-frequency ultrasound. We therefore consider that studies with a larger number of patients could be of interest to validate the ultrasound patterns and thus enable us to improve the sensitivity and specificity of the ultrasound diagnosis of dermal and subdermal lesions.

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Dermoscopic Features of Pigmented Fungiform Papillae of the Tongue[☆]



Características dermatoscópicas de las papilas fungiformes pigmentadas de la lengua

To the Editor:

Fungiform papillae of the tongue are small projections involved in taste function that are typically located on the lateral aspects and tip of the tongue. They are called *fungiform papillae* because of their close resemblance to a fungus. In fair-skinned individuals, they are usually pink or red, but in dark-skinned individuals, they are frequently pigmented and are considered a variant of normal oral pigmentation.¹ We report a case of pigmented fungiform papillae of the tongue (PFPT) and describe its dermoscopic features, which have been rarely reported in the literature.

A 30-year-old black woman with no personal or family history of interest was evaluated for a pigmented lesion with no apparent cause on the tongue. The lesion had appeared in adolescence but had remained stable and asymptomatic (Fig. 1). The patient was not taking any regular medication, did not smoke, had not had dental treatment in the area of

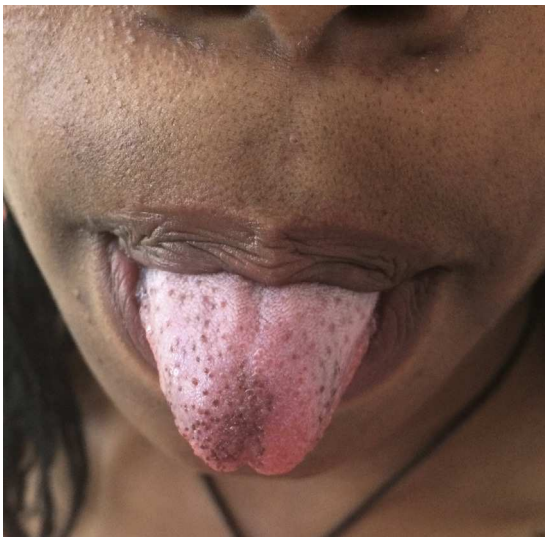


Figure 1 Multiple brown fungiform papillae located on the tip and lateral aspects of the tongue.

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the papillae, and had adequate oral hygiene. The rest of the physical examination was unremarkable.

Dermoscopy showed several projections with hyperpigmented edges whose surfaces contained vessels that emerged from the base forming successive branches resembling rose petals. This rose petal pattern was previously described by Mukamal et al.² in PFPT (Fig. 2). Another report of the dermoscopic features of PFPT referred to a cobblestone or cobblestone-like pattern,³ but we believe that this is less accurate as the lesion is not a nevus.

PFPL are located on the tip, dorsum, and/or lateral aspects of the tongue, and are distributed among filiform papillae. They are typically red or pink, although a brown variant has been reported. Most cases of PFPT in the literature have been described in Afro-American patients, suggesting that black individuals are more susceptible to this condition than other races.¹ The pigmentation is limited to the fungiform papillae, and lesions usually appear in childhood, do not progress, and remain asymptomatic.

The differential diagnosis should include other pigmented lesions of the oral mucosa, such as those seen in hemochromatosis, pernicious anemia, amalgam tattoo, and Addison disease. In all cases, however, a clear diagnosis can be established based on either the clinical features and distribution of the lesions or the accompanying manifestations.⁴

The pathogenesis of PFPT is unknown, and it is also unclear why only the fungiform papillae are affected; treatment is not necessary due to the benign nature of the condition.⁴

Histologic examination may or may not reveal pigmentation of basal keratinocytes with abundant melanophages

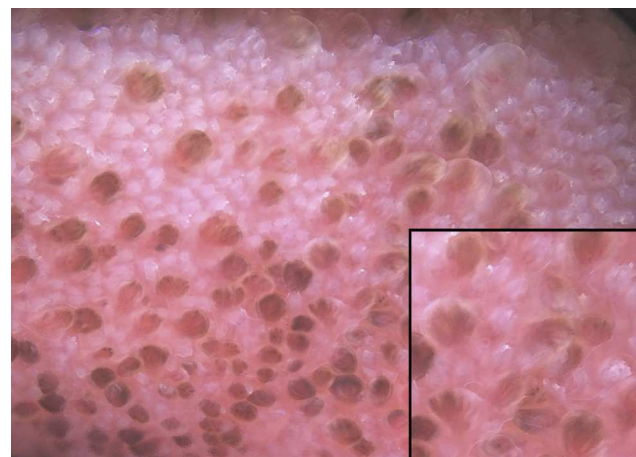


Figure 2 Dermoscopic image showing multiple projections with pigmented borders crossed by vessels branching from the base, creating a rose petal-like appearance.