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## Ultrasound in the Evaluation of Cutaneous Metastases of Internal Tumors<sup>☆</sup>



### Estudio ecográfico de metástasis cutáneas de origen visceral

To the Editor:

Cutaneous metastasis is the clinical manifestation of neoplastic cells that have spread to the skin from a visceral tumor. Its prevalence, which is rising due to higher rates of histologic diagnosis and/or evaluation, is estimated at between 0.7% and 9% depending on the series.<sup>1</sup> Cutaneous metastases are a common reason for consultation between dermatologists and are often suspected as an initial diagnosis because the lesions are easily identifiable during physical examination. They are important to recognize as they can lead to the diagnosis of an unknown primary tumor, indicate the spread of a known tumor, or be an early sign of recurrence of a tumor thought to be in remission.<sup>2</sup> The most common visceral tumors that cause cutaneous metastasis are lung cancer in men, breast cancer in women, and gastric adenocarcinomas in both men and women.<sup>3</sup> Cutaneous metastases can present as any number of elementary lesions, which can be solitary or multiple or asymptomatic or painful.

Diagnosis must be confirmed histologically and in some cases an immunohistochemical panel may be necessary. Few studies and case series have analyzed the value of imaging studies prior to biopsy in cutaneous metastasis. High-frequency skin ultrasound is a fast, safe technique that can provide diagnostic information and, on occasions, pre-operative information following a clinical diagnosis. Findings often lead to a change in disease stage.

We present 6 cases of cutaneous metastasis from visceral tumors evaluated in our department between January and July 2017. We describe clinical and epidemiological characteristics and B-mode and Doppler ultrasound features. All the metastases were studied using the Esaote Mylab ultrasound system equipped a transducer that operates between 18 and 20 MHz. The Doppler pulse repetition frequency was

750 MHz for a 20-MHz frequency, and the gain was adjusted to the level immediately before the flash artifact.

There were 4 men and 2 women aged between 45 and 75 years. All the patients were referred to the medical oncology department for evaluation of skin lesions suspected to be cutaneous metastases. Just 1 patient was receiving adjuvant therapy. The other 5 were under treatment for a previously diagnosed tumor. Three of the patients had just 1 lesion when evaluated by the dermatology department. All the lesions had a diameter of over 9 mm except for some smaller lesions (4-6 mm) in patient #6. The epidemiologic, clinical, and B-mode ultrasound characteristics are summarized in [Table 1](#).

Large series have reported on the ultrasound features of cutaneous metastases from melanoma,<sup>4</sup> but this has not been the case for metastases from visceral tumors.<sup>5,6</sup> Moreover, most of the series that do exist have been published by radiologists and deal mainly with subcutaneous lesions (both palpable and nonpalpable). The authors of these studies stress that while cutaneous metastases do not necessarily indicate terminal disease, they are always a sign of disease spread. From an ultrasound perspective, all the lesions studied were located in the subcutaneous tissue, whereas in our series, given their accessibility, they were also observed in the epidermis and dermis. The most characteristic B-mode ultrasound finding for metastatic cutaneous lesions is an irregular, polycyclic shape, which was observed in 5 of the 6 patients in our series ([Fig. 1](#)).

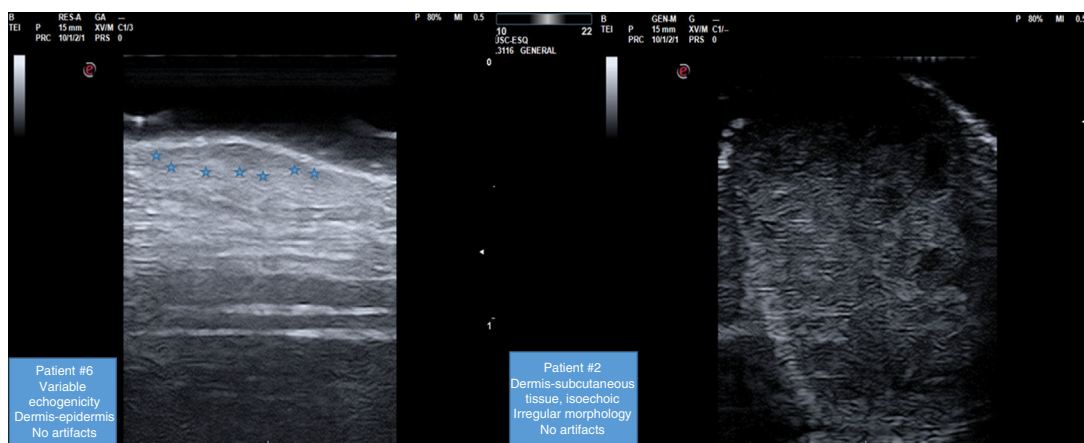
Giovagnario et al.<sup>7</sup> described 4 vascular patterns for cutaneous metastases evaluated by ultrasound: avascular, hypovascular with a single vascular pole, hypervascular with multiple peripheral poles, and hypervascular with internal vessels. All 4 patterns were observed in our series. Some authors have claimed that vascularization is highly suggestive and predictive of malignancy, with a sensitivity of 91% and a specificity of 93%.<sup>8</sup> Avascular and hypovascular patterns may be due to lesion size, necrosis, or the presence of vessels that are too small to detect with the equipment used. This was the case with patient #6 in our series ([Fig. 2](#)).

In conclusion, we have described the ultrasound features of a series of cutaneous metastases from visceral tumors with similar clinical features to those described in the literature. B-mode ultrasound does not reveal any specific patterns and must be complemented by Doppler imaging, which offers greater diagnostic sensitivity and specificity. High-frequency skin ultrasound is a useful diagnostic method for planning treatment and monitoring cutaneous metastases from visceral tumors.

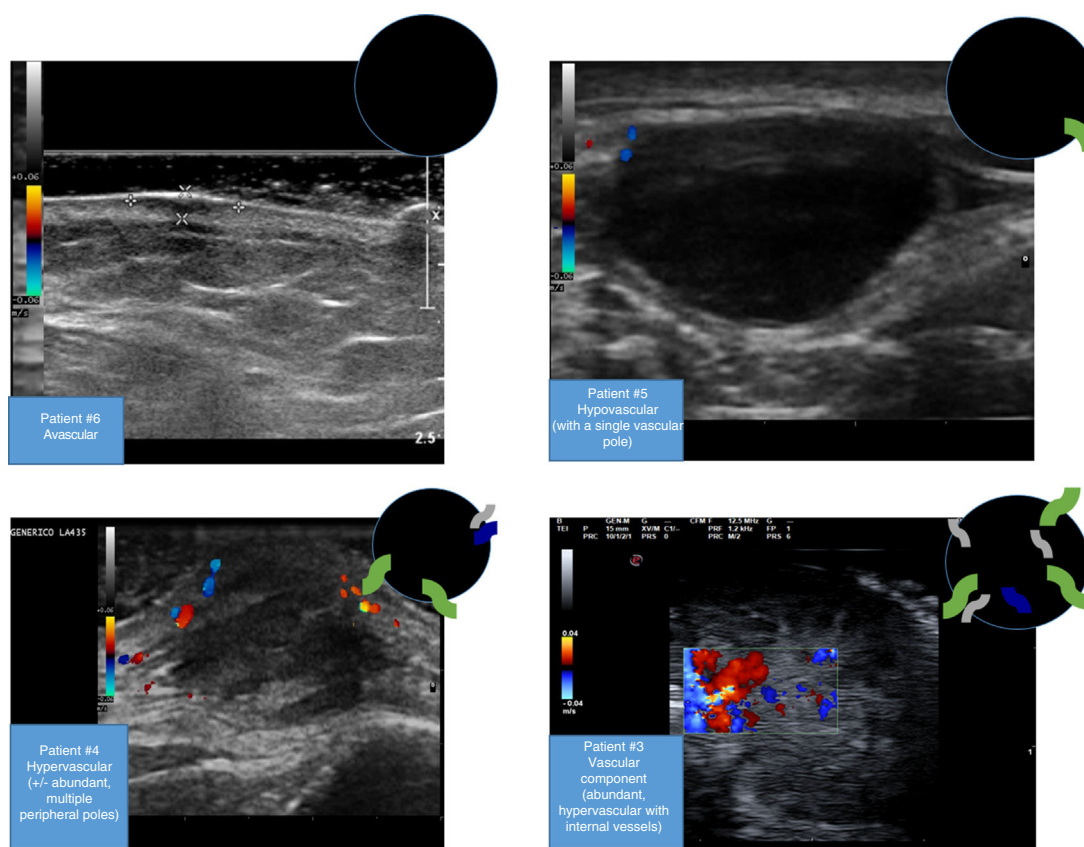
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**Table 1** Epidemiological, Clinical, and Ultrasound Characteristics in 6 Patients With Cutaneous Metastases From Visceral Tumors.

Patient	Sex	Age, y	Primary Tumor	No. of Lesions	Location	Echogenicity	Morphology Ultrasound Location Heterogeneity	Margins	Artifacts
1	Male	75	Renal cell carcinoma Treatment: sunitinib	2	Back	Hypoechoic	Regular Dermis-epidermis Heterogeneous	Poorly defined	No
2	Male	50	Renal cell carcinoma Treatment: sunitinib	1	Scalp	Hypoechoic	Irregular Dermis- subcutaneous tissue Heterogeneous	Poorly defined	No
3	Male	45	Small-cell lung cancer	1	Chest	Variable	Irregular Dermis- subcutaneous tissue Heterogeneous	Poorly defined	Posterior reinforcement
4	Male	65	Prostate adenocarcinoma	1	Thigh	Hypoechoic	Irregular Dermis- subcutaneous tissue Heterogeneous	Poorly defined	No
5	Female	56	Breast cancer	2	Chest	Variable	Regular Dermis-subcutaneous tissue Homogeneous	Poorly defined	No
6	Female	56	Breast cancer (adjuvant treatment)	5	Neck	Hypoechoic	Regular Dermis-epidermis Homogeneous	Well defined	No



**Figure 1** B-mode ultrasound findings of cutaneous metastases in patients #2 and #6.



**Figure 2** Doppler ultrasound patterns for patients in our series.

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## Isomorphic Morphea in a Girl Motorcyclist<sup>☆</sup>



### Morfea con distribución isomórfica en una niña motociclista

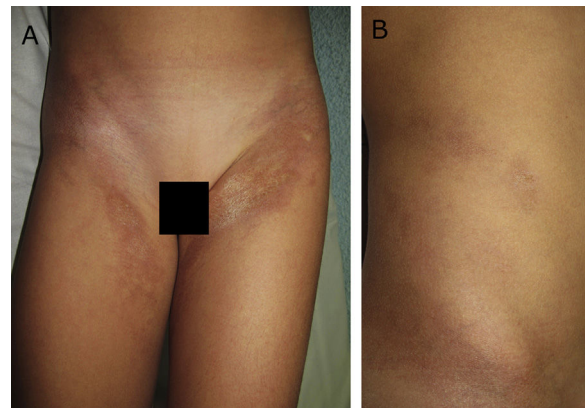
To the Editor:

Localized scleroderma, also known as morphea, is a fibrosing and inflammatory disease of the skin and underlying tissues. It is the most common type of scleroderma in childhood, with an incidence of 3.4 cases per 1 000 000 children per year.<sup>1</sup> Linear morphea is the most frequent presentation. The etiology and pathogenesis of this condition remain unknown, although the interaction between inflammatory, fibrotic, and vascular factors seems to play a fundamental role. It has also been suggested that local trauma can lead to the appearance of lesions.<sup>2</sup>

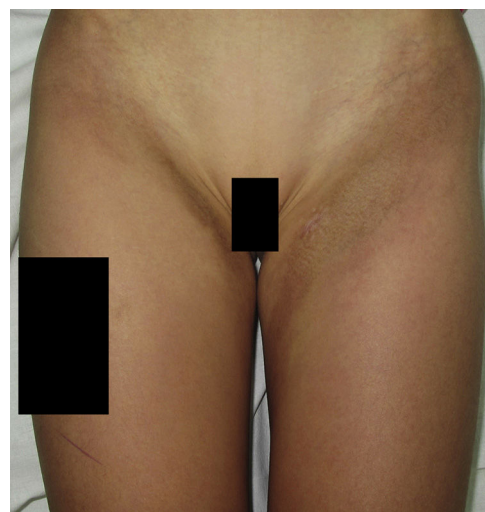
A 9-year-old girl with no medical history of interest reported asymptomatic skin lesions on both thighs that had gradually extended to the abdomen. The lesions had first appeared 1 year earlier. A closer examination of the patient's history revealed that she was a competitive motorcyclist who had been training for approximately 10 hours per week for the previous 2 years wearing a very tight motorcycle suit. Physical examination revealed hyperpigmented plaques with pearly areas on the anterior-medial aspect of both thighs (Fig. 1A). The lesions were distributed symmetrically and extended upward toward the trunk (Fig. 1B). There were no findings suggestive of systemic scleroderma. Given the suspicion of morphea, we performed a skin biopsy, which revealed thickening and compaction of collagen fibers at the level of the reticular dermis and a mild superficial and deep perivascular lymphoplasmacytic infiltrate. A blood analysis with biochemistry, complete blood count, and autoimmunity testing revealed no significant findings. Based on clinical, analytical, and histological findings, the diagnosis was morphea that could have been caused by local injury. The patient was treated with systemic corticosteroids

at 0.5 mg/kg/d (subsequently tapered) and methotrexate 10 mg weekly for 18 months. The induration resolved and only the hyperpigmentation persisted (Fig. 2).

While the etiology and pathogenesis of localized scleroderma are unknown, several case studies in the scientific



**Figure 1** Hyperpigmented plaques with pearly areas that are indurated on palpation on the anterior-medial aspect of both thighs (A) and the right flank (B).



**Figure 2** Residual hyperpigmentation without sclerosis after treatment with oral corticosteroids and methotrexate.

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