

Correspondence

Usefulness of high-resolution ultrasound in the management of facial inflammatory dermatoses

Dear Editor,

Diagnosis of inflammatory dermatoses occurring on the face (IDF) can be challenging. The differential diagnosis includes tumoral, inflammatory, infectious, and iatrogenic pathologies (such as cosmetic fillers). The use of high-resolution ultrasound (HRU) in dermatology is increasing.¹ We sought to evaluate HRU in the management of IDF.

A retrospective study of patients with a suspected or final diagnosis of IDF, who underwent ultrasound evaluation in the dermatology department of a Spanish tertiary hospital between January 1, 2016, and October 31, 2018, was performed. Clinical and epidemiological data, results of HRU, and histological studies were registered. HRU evaluation was performed by a dermatologist with 2 years of experience in this field using an Esaote My Lab Class C (Esaote, Genoa, Italy) with 18 and 22 MHz probes. Cohen's kappa coefficient (95% confidence interval) was used to determine the agreement between clinical and HRU diagnoses.

A total of 1,314 patients were evaluated (1,633 HRU), and 32 of them presented with IDF (40 HRU) and were included in the study (Table 1). Median age was 52.5 years (range, 12–79), and 68.8% of cases were women. Median duration of symptomatology was 18 months (range, 0.1–288). Clinical presentation was variable, most frequently nodules (14/32), followed by erythematous plaques (11/32) and skin tumefaction (5/32), among others. The most common location was the lips (8/32), followed by the forehead (including eyebrows) (8/32) then cheeks and nose (6/32). HRU was performed for diagnosis in 24 (75%), for follow-up in two (6.2%), and for diagnosis and follow-up in six (18.8%) patients. The most frequent clinical diagnosis (prior to performing HRU) was granulomatous disease (6/32), benign neoplasms (6/32), filler complications (5/32), malignant neoplasms (5/32), and others (10/32). The most frequent HRU diagnosis was filler complications (9/32), granulomatous disease (5/32), benign neoplasms (5/32), malignant neoplasms (4/32), and others (9/32). Clinical and HRU diagnoses were concordant in 65.6% of cases, with a kappa coefficient of 0.63 (95% CI, 0.44–0.81) (moderate level of agreement). HRU modified the clinical diagnosis in 11 patients (34.4%). In one, histologic study was carried out and confirmed the HRU diagnosis. HRU obviated the need to perform a skin biopsy in seven cases (21.9%) (Table 2). HRU changed the clinical diagnosis in 75% (3/4) of cases with ear or preauricular lesions, 66% (2/3) of jaw and chin lesions, and 50% (4/8) of oral lesions (lips) (all were filler complications).

Table 1 Clinical, epidemiological, and ultrasound characteristics of patients presenting with facial inflammatory dermatoses

Characteristic	n (%)
Sex	
Male	10 (31.3)
Female	22 (68.7)
Age	
<40 years	9 (28.1)
40–60 years	8 (25)
>60 years	15 (46.9)
Clinical presentation	
Nodules	14 (43.8)
Erythematous plaques	11 (34.4)
Skin tumefaction	5 (15.6)
Skin induration	1 (3.1)
Skin atrophy	1 (3.1)
Location	
Mouth (lips)	8 (25)
Forehead	8 (25)
Cheeks and nose	6 (18.7)
Ears and preauricular area	4 (12.5)
Eyelids	3 (9.4)
Jaw and chin	3 (9.4)
Evolution time	
<6 months	8 (25)
6–12 months	11 (34.4)
>12 months	13 (40.6)
Clinical diagnosis	
Granulomatous disease ^a	6 (18.8)
Benign neoplasm ^b	6 (18.8)
Filler complication	5 (15.6)
Malignant neoplasm ^c	5 (15.6)
Scleroderma or morphea	3 (9.4)
Skin infection	2 (6.2)
Others ^d	5 (15.6)
Ultrasound diagnosis	
Filler complication ^e	9 (28.1)
Granulomatous disease	5 (15.6)
Benign neoplasm	5 (15.6)
Malignant neoplasm	4 (12.5)
Skin infection	2 (6.3)
Morphea	1 (3.1)
Others ^f	6 (18.8)

^aFacial granuloma (3), sarcoidosis (1), necrobiotic xanthogranuloma (1), and granulomatous cheilitis (1).

^bCysts (3), vascular tumors (2), and pseudolymphoma (1).

^cBasal cell carcinoma (1), mycosis fungoides (1), cutaneous lymphoma (1), and skin melanoma metastasis (1).

^dKikuchi disease (2), panniculitis (1), hereditary angioedema (1), and jellyfish sting (1).

^eTypes of fillers: silicone (4), hyaluronic acid (2), and unknown (3).

^fDermatitis (1), Kikuchi disease (1), foreign body (1), eyelid edema (1), acne (1), and jellyfish sting (1).

Table 2 Clinical and ultrasound features of facial inflammatory dermatoses where ultrasound modified clinical diagnosis

Case	Sex/age	Clinical presentation	location	Evolution (months)	Clinical diagnosis	Sonographic diagnosis	Histological diagnosis	Avoided biopsy
1	f/75	Increase in lips volume	Lips	4	Angioedema	Complication from filler injection (silicone)	NP	No ^a
2	f/55	Increase in lips volume	Lips	24	Scleroderma	Complication from filler injection (silicone)	NP	Yes
3	f/45	Erythematous increase in lips volume	Lips	10	Granulomatous cheilitis	Complication from filler injection (unknown composition)	NP	Yes
4	f/33	Erythematous increase in lips volume	Lips	2	Scleroderma	Complication from filler injection	NP	Yes
5	f/12	Tender increase in volume	Front, eyebrow	2	Vascular tumor	Foreign body	NP	No ^a
6	m/42	Erythematous nodule	Jaw	8	Hemangioma	Erythematous keloid	NP	Yes
7	m/62	Erythematous nodule	Jaw	62	Infected epidermoid cyst	Solid tumor	Cutaneous centrofollicular lymphoma	No
8	f/63	Erythematous nodule	Preauricular	4	Recurrent basal cell carcinoma	Erythematous keloid	NP	Yes
9	f/79	Erythematous nodule	Eyelid	0.4	Melanoma metastasis	Palpebral edema	NP	Yes
10	f/39	Erythematous nodule	Preauricular	6	Kikuchi disease	Epidermoid cyst	NP	Yes
11	m/31	Erythematous nodule	Preauricular	6	Epidermal cyst	Nodulocystic acne	NP	No ^a

f, female; m, male; NP, not performed.

^aAlthough HRU changed the clinical diagnosis in these three cases, the clinician had previously decided not to perform a skin biopsy.

HRU is a rapid, low-cost, and safe technique and may increase the diagnostic accuracy in dermatological diseases to more than 97%.² Furthermore, HRU can modify the clinical diagnosis in 10% of cases.³


Diagnosis of facial dermatoses can be complex. The usefulness of HRU in the diagnosis of filler complications is especially relevant, since patients can be reluctant to admit (or may have forgotten) the procedure. HRU can even determine the filler type.⁴

Our study underlines the usefulness of HRU in dermatology not only for cutaneous malignancies but also for inflammatory dermatoses. In facial dermatoses, diagnostic accuracy becomes even more relevant, given the aesthetic implications and impact on the quality of life.⁵ In our series, HRU modified the clinical diagnosis in more than one third of cases and avoided performing a skin biopsy in more than 20% of them. In dermatoses affecting the lips, jaw, chin, or auricular/preauricular area, these rates were even higher. Strikingly, HRU allowed the diagnosis of filler complications in four patients who repeatedly denied having had the procedure.

To the best of our knowledge, this is one of the very few studies which shows that HRU can modify clinical diagnosis and management in dermatologic practice, avoiding unnecessary biopsies.

HRU is rapid, low-cost, and safe and can be very useful in the management of facial dermatoses, limiting the performance of invasive procedures.

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References

- Echeverría-García B, Borbujo J, Alfageme F. The use of ultrasound imaging in dermatology. *Actas Dermosifiliogr* 2014; **105**: 887–890.
- Wortsman X, Wortsman J. Clinical usefulness of variable-frequency ultrasound in localized lesions of the skin. *J Am Acad Dermatol* 2010; **62**: 247–256.
- Vidal D, Ruiz-Villaverde R, Alfageme F, et al. Use of high frequency ultrasonography in dermatology departments in Spain. *Dermatol Online J* 2016; **22**. pii: 13030/qt0249s215.
- Wortsman X, Wortsman J, Orlandi C, et al. Ultrasound detection and identification of cosmetic fillers in the skin. *J Eur Acad Dermatol Venereol* 2012; **26**: 292–301.
- Ludwig MW, Oliveira SM, Muller MC, et al. Quality of life and site of the lesion in dermatological patients. *An Bras Dermatol* 2009; **84**: 143–150.