

ULTRASOUND ASSESSMENT OF REACTIVE LYMPHADENOPATHIES DUE TO EXTREME REACTIONS FROM PATCH TESTS

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KEY WORDS: lymph node; lymphadenopathy; patch test; complications; side-effect; allergic contact dermatitis; allergic contact dermatitis syndrome; case report; methylisothiazolinone/methylchloroisothiazolinone; methylisothiazolinone.

Patch testing is the standard diagnostic procedure for allergic contact dermatitis (ACD), the purpose of it being to reproduce a “miniature” eczematous reaction on the skin, by applying the allergens occluded according to international consensus guidelines.¹ Lachapelle et al developed the concept of “allergic contact dermatitis syndrome” (ACDS), which implies three consecutive stages with specific morphological aspects and symptomatology². Stage 2 is linked to the regional dissemination of the allergen(s) to the lymph nodes from the primary site of exposure via the lymphatic vessels.² Although patch tests are generally very safe, some complications from them have been described. We hereby report a patient with several extreme positive patch test reactions developed bilateral axillary reactive lymphadenopathy.

CASE REPORT

A 44-year-old woman, working as physiotherapist, with a clinical history of jewelry intolerance, came to our office with pruritic hand eczema and nail dystrophy lasting 20 years. Lesions partially improved with topical corticosteroids. Patch tests with the Spanish Contact Dermatitis Research Group (GEIDAC) baseline series (TRUE Test, Marti Tor Barcelona, Spain) and supplementary allergens (Chemotechnique Diagnostics, Vellinge, Sweden); a fragrance and a cosmetic series (Chemotechnique Diagnostics) and 21 of her own personal care, cosmetic and workplace products were performed. Exposure times and scoring readings were conducted according to ESCD guidelines¹. Table 1 summarizes the positive results observed to multiple allergens on days 2 (D2), D4 and D7 (Figure 1). Patch test reactions from methylisothiazolinone/methylchloroisothiazolinone and methylisothiazolinone were extreme positive requiring topical therapy with corticosteroids.

Current relevance was attributed to methylisothiazolinone/methylchloroisothiazolinone and methylisothiazolinone present in several personal cosmetic and domestic cleaning products. Relevance to HEMA could not be determined. The patient had used long-lasting nail polish only once four years ago and underwent many dental treatments without recalling any reactions from any of these procedures. On D4, the patient complained of several palpable sore bumps on both armpits, after complaining of physical discomfort already on D2.

Axillary ultrasonography was performed on D7, and enlargement of several lymph nodes observed. Morphologically, ultrasound images were consistent with reactive lymphadenopathies (Figure 2). The lymphadenopathies as well as the intense positive patch test reactions resolved in 12 and 15-20 days respectively.

DISCUSSION

Lymphadenopathies following severe patch test reactions have rarely been reported in the literature. A right axillary lymphadenopathy secondary to a strong positive patch test reaction located on the lower back was published by Wong and Maibach in 1982³.

On the other hand, reactive lymphadenopathies may follow severe ACD from potent sensitizers such as *p*-phenylenediamine⁴ or propolis⁵. Additionally, cervical lymphadenopathy is a well-known side effect of topical immunotherapy with diphenylcyclopropenone (involving 17.6% of alopecia areata patients thus treated)⁶ or squaric acid dibutylester⁷. In our case, extreme patch test reactions to methylisothiazolinone involved both sides of the patient's back and axillary lymphadenopathies were bilateral. The reactive lymphadenopathy may seem distant from the patch test reaction in both the previously published case by Wong and Maibach³, and our case (patch test reactions from methylisothiazolinone located on the left site of the lumbar region). The relationship between axillary lymphadenopathies and these caudally located

test reactions may be explained by the fact that the posterior thoracic wall skin is drained by the afferent vessels of the subscapular group of the axillary nodes whose efferent vessels, in turn, pass to the central axillary nodes³.

Lymphadenopathies following strong patch tests reactions may be underdiagnosed because clinical suspicion is low and diagnosis by palpation may be difficult. In our case, the fact that our patient was a health care worker and noticed swellings herself, as well as the availability of ultrasound technology and trained personnel in echography in our department helped diagnosing the condition.

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TABLES

ONLINE SUPPLEMENTAL TABLE 1: Positive patch test reactions

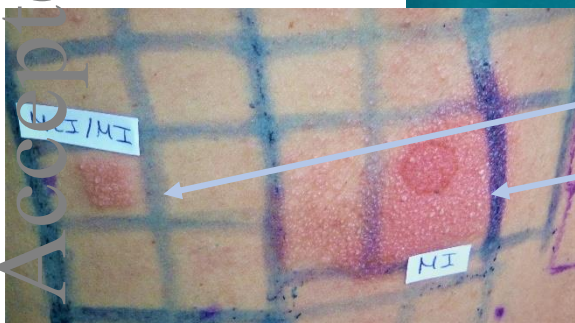
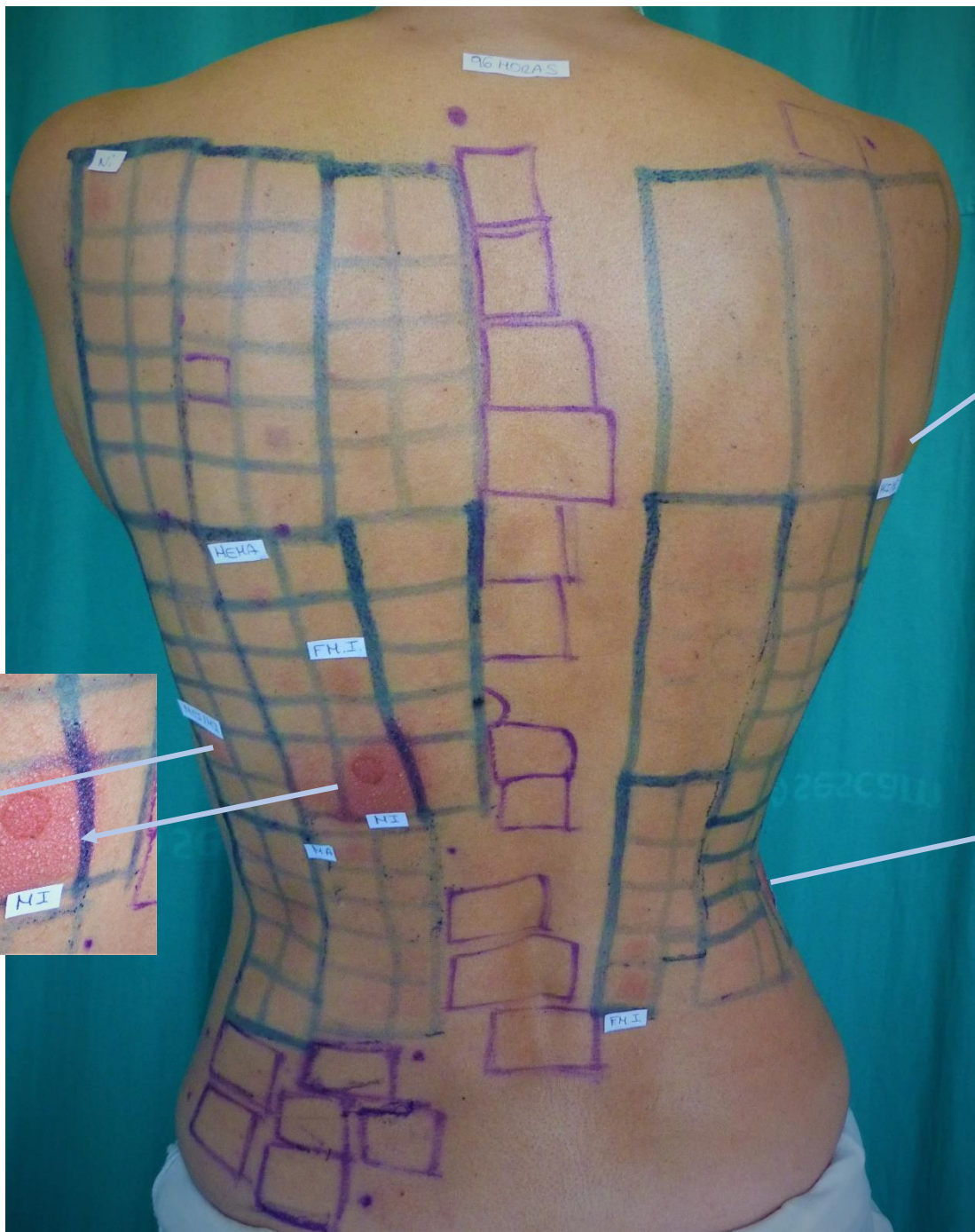
Patch tested series and other products	Positive Allergens	Results on D2/D4/D7 readings	Relevance
GEIDAC baseline series (TRUE Test and supplementary allergens)	Methylchloroisothiazolinone/ methylisothiazolinone/ (0.0024 mg/ 0.0008 mg) polyvidone	++/+++/++	Current
	Methylisothiazolinone 0.2% aq.	+++/+++/>+++	Current
	Nickel sulfate 0.036 mg hydroxypropylcellulose	+/>++/++	Past
	2-n-octyl-4-isothiazolin-3-one 0.1% pet.	?+/?+/-	Unknown
	hydroxyethyl-methacrylate 2% pet.	-/>++/++	Unknown
	Fragrance Mix I	++/+/?+	Unknown

Cosmetic series	Methylisothiazolinone/ methylchloroisothiazolinone 0.02% aq.	++/++/++	Current
	Methylisothiazolinone 0.2% aq.	+++/+++/>+++	Current
Fragrance series	Fragrance mix I 6% pet.	+/-/-	Unknown
	Methyl anthranilate 5% pet.	+/-/-	Unknown
	Limonene hydroperoxides 0.3% pet.	-/+/-	Unknown

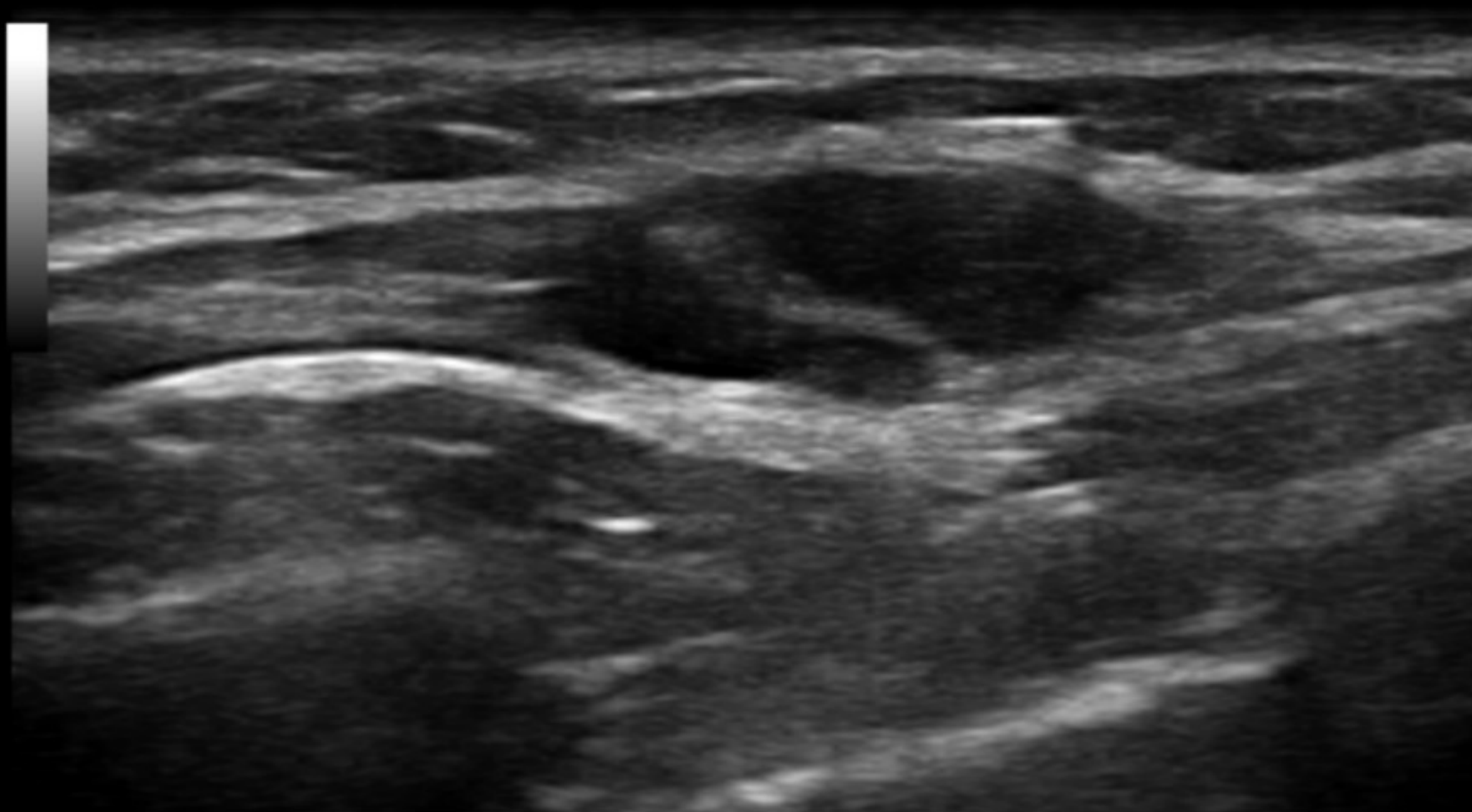
FIGURES

Figure 1: Positive reactions to patch tests on day 4 included the extreme positive reactions caused by methylisothiazolinone 0.2% aqua

Figure 2: Ultrasound features consistent with reactive lymphadenopathy: **(A)**. B-Mode ultrasound: oval-shaped hypoechoic lymphadenopathy, with central echogenic hilum and unsharp borders, **(B)**. Color Doppler Ultrasound: prominent hilar vascularity.



LA435



A.

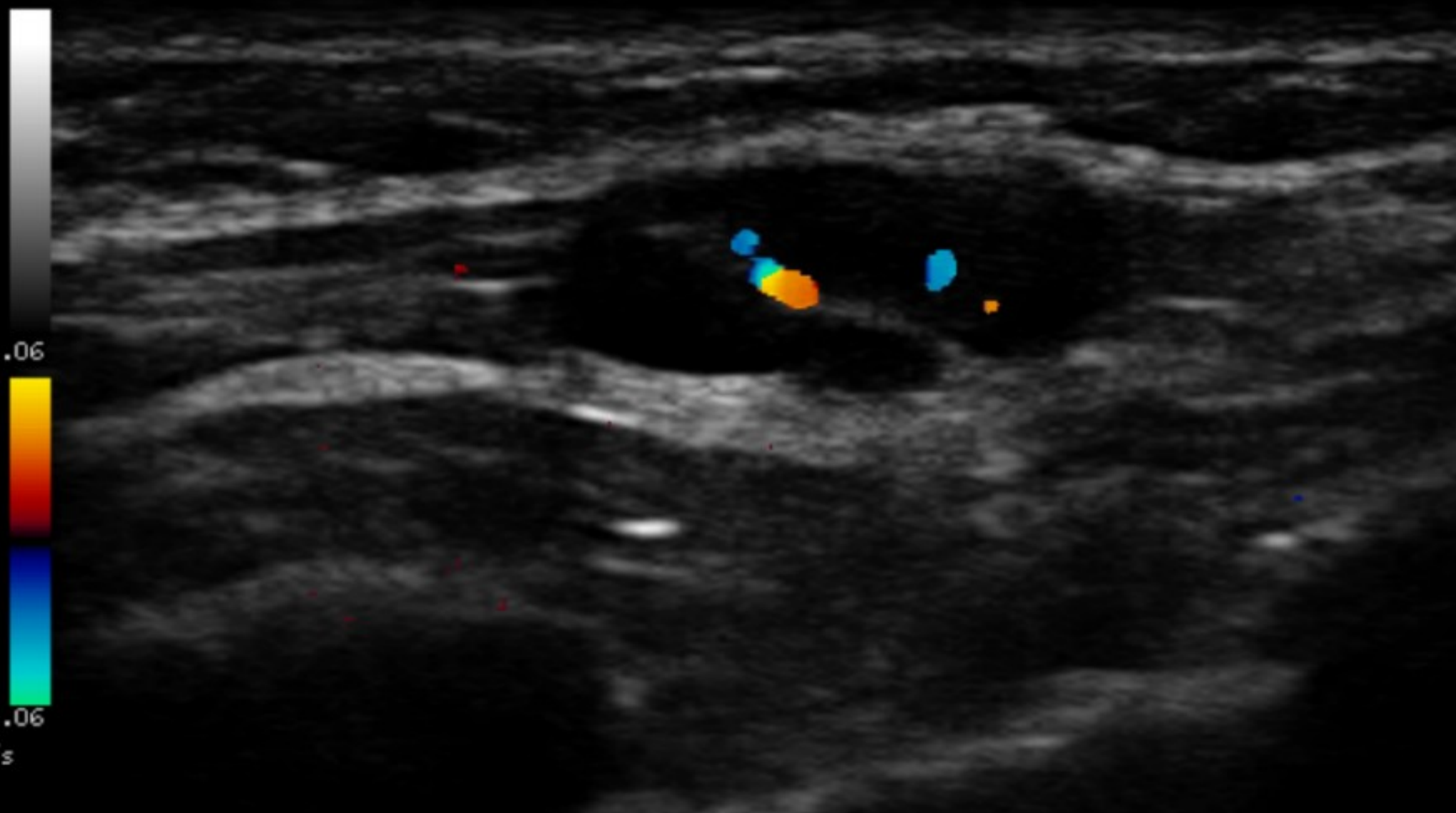
LA435



+0.06

-0.06

m/s



B.

ONLINE SUPPLEMENTAL TABLE 1: Positive patch test reactions

Patch tested series and other products	Positive Allergens	Results on D2/D4/D7 readings	Relevance
GEIDAC baseline series (TRUE Test and supplementary allergens)	Methylchloroisothiazolinone/ methylisothiazolinone/ (0.0024 mg/ 0.0008 mg) polyvidone	++/+++/++	Current
	Methylisothiazolinone 0.2% aq.	+++/>+++/>+++	Current
	Nickel sulfate 0.036 mg hydroxypropylcellulose	+/>+++/>++	Past
	2-n-octyl-4-isothiazolin-3-one 0.1% pet.	?+/>?+/>-	Unknown
	hydroxyethyl-methacrylate 2% pet.	-/>++/>++	Unknown
	Fragrance Mix I	++/>+/>?+	Unknown
Cosmetic series	Methylisothiazolinone/ methylchloroisothiazolinone 0.02% aq.	++/>++/>++	Current
	Methylisothiazolinone 0.2% aq.	+++/>+++/>+++	Current
Fragrance series	Fragrance mix I 6% pet.	+/>+/>-	Unknown
	Methyl anthranilate 5% pet.	+/>-/>-	Unknown

	Limonene hydroperoxides 0.3% pet.	-/+/-	Unknown
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