Dermatology Reports
https://www.pagepress.org/journals/index.php/dr/index

eISSN 2036-7406

Please cite this article as:

Rizzuto G, Rega F, Skroza N, et al. Non-invasive imaging for monitoring nodular inflammatory lesions in hidradenitis suppurativa. *Dermatol Rep 2026 [Epub Ahead of Print] doi: 10.4081/dr.2026.10390*

Submitted 05/04/25 - Accepted 20/05/25

Non-invasive imaging for monitoring nodular inflammatory lesions in hidradenitis suppurativa

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Key words: D-OCT; RCM; LC-OCT; hidradenitis suppurativa.

Contributions: all authors contributed equally. They have read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of interest: the authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Ethics approval and consent to participate: not applicable.

Consent for publication: the patients gave written consent to use personal data for the publication of this article and any accompanying images.

Availability of data and materials: not applicable.

Dear Editor,

Noninvasive skin diagnostic techniques are widely used in dermatology, and their role in the diagnosis and monitoring of inflammatory skin diseases is still being explored.

Hidradenitis suppurativa (HS) is a chronic, relapsing inflammatory disease of the skin associated with multiple comorbidities and a significant negative impact on patients' quality of life.[1] HS is mainly diagnosed clinically, and imaging techniques are not routinely used, with the exception of evaluation of sinus tracts by ultrasound and, more rarely, magnetic resonance imaging (MRI).[2]

We monitored two nodular lesions in patients with HS undergoing biological treatment for concomitant psoriasis using non-invasive imaging. Patient 1 had a nodular lesion in the left axilla and initiated biologic therapy with risankizumab (anti-interleukin (IL)-23), while patient 2 had one in the abdomen and was treated with bimekizumab (anti-IL-17).

Images were acquired by reflectance confocal microscopy (RCM; Vivascope 1500®, Vivascope GmbH, Munich, Germany), dynamic optical coherence tomography (D-OCT; Vivosight®, Michelson Diagnostics Ltd, Maidstone, UK), and line-field confocal optical coherence tomography (LC-OCT; DAMAE Medical®, Paris, France) before the start of treatment and after 16 weeks of therapy with bimekizumab (anti-IL-17) and risankizumab (anti-IL-23), respectively. D-OCT was used to assess the vascularization of nodular lesions at depths of 150 µm, 300 µm, and 500 µm. At 16 weeks, both patients showed regression of nodular lesions at imaging evaluation.

RCM and LC-OCT were not useful for monitoring treatment response, likely due to their limited penetration into the dermis. However, both techniques revealed psoriatic histologic features in nonpsoriatic skin. Acanthosis, papillomatosis, and dilated vessels were observed at baseline and after 16 weeks, even in the absence of clinical lesions in the areas examined. D-OCT was most effective in assessing vascular changes in inflamed nodules.

Patient 1 demonstrated a significant reduction in vascularity, as shown in Figure 1E. Threshold calculation showed decreased vascularity in the inflamed nodules. A reduction in vascular intensity was observed at 150 µm, 300 µm, and 500 µm, as detailed in Table 1.

In addition, Figure 1A shows an OCT scan where a dermal opacity (arrows) with a blurred dermal-epidermal junction (DEJ) and a granular epidermal appearance is observed, as described in the study by Manfredini *et al.*[3] These features were no longer present at week 16.

In patient 2, the decrease in vascularity was less evident, with persistent vascular intensity at 500 µm, as shown in Figure 1I, due to skin inflammation resulting from the exacerbation of psoriasis after an 8-week suspension of treatment for personal reasons. From the clinical point of view, the visible nodular lesion had regressed entirely, as illustrated in Figure 1G. No other features were observed.

In conclusion, D-OCT proved useful in monitoring disease activity in HS, whereas LC-OCT and RCM showed greater utility in evaluating psoriatic lesions.

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Figure 1. D-OCT in monitoring nodular lesions in hidradenitis suppurativa. (**A**-**E**) Cross-sectional OCT image of an HS nodule in the left axillary cavity; (**A**) poorly defined dermo-epidermal junction, infundibular hyperkeratinization (white arrow), and increased epidermal thickness; clinical images at baseline (**B**) and after 16 weeks (**C**) of the axillary nodule in treatment with risakizumab; (**D**, **E**) en face D-OCT images show a decrease in vascularization at 500 µm; clinical images at baseline (**F**) and after 16 weeks (**G**) of the right abdominal nodule treated with bimekizumab; (**H**, **I**) en face D-OCT images show an increase in vascularization at 500 µm due to the recurrence of psoriasis; the nodule was not detectable.

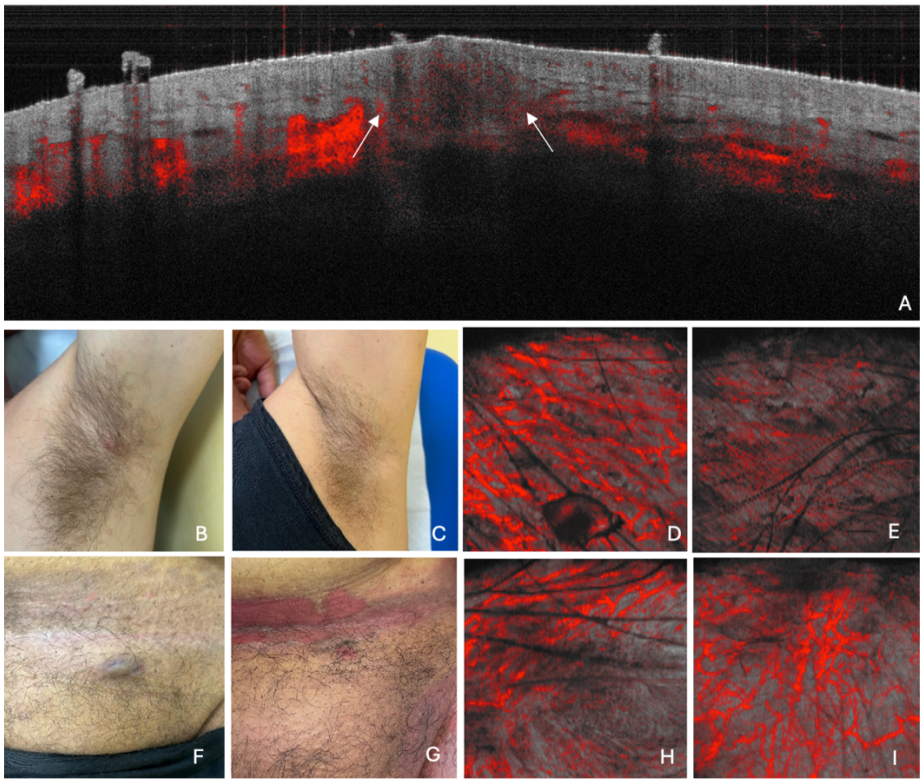

Table 1. Vascular intensity variation observed in OCT.

Intensity level	**Patient**	**Baseline**	**After 16 weeks**
150 µm	1	2114	3
	2	1331	989
300 µm	1	13017	939
	2	12980	8221
500 µm	1	41306	4245
	2	23875	35020