

Reply to: Superb microvascular imaging in giant cell arteritis by Conticini *et al.*

Sirs,
we read with interest the letter by Conticini *et al.* (1), a comment on our paper reviewing the newest applications of ultrasonography in rheumatology (2). The Authors described the use of superb microvascular imaging (SMI), a new technique adding further sensitivity to the detection of vascularization, to help clinical decisions in a patient with giant cell arteritis (GCA).

With ultrasonography gaining a relevant role in the management of rheumatic and musculoskeletal diseases (RMDs), there is a greater interest in new instruments able to enrich the results of a standard ultrasonographic assessment. In the case reported by Conticini *et al.*, the high sensitivity of SMI has been exploited to define deeper clinical remission in a patient with GCA, in whom a persistently increased wall thickness did not allow to rule out subclinical disease activity. The ability of SMI to identify hypervascularization at the vessel wall in patients with large-vessel vasculitis had previously been reported (3), however, this is the first description of its application to discriminate active and inactive disease in persisting wall thickening, a lesion described to decrease slowly after the prescription of effective treatment (4).

These findings are of value and open the way to further research on the application of SMI in vasculitis, with the ultimate goal of providing a tool to complement clinical assessment. In the past, in RMDs, this central aspect has sometimes been lost from sight, with studies on ultrasound and its new applications tending not to reproduce a true clinical setting and requiring subsequent research to achieve validation and define the correct placement of each technique. In some cases, the lack of solid evidence has

even led to question the real value of ultrasonography, triggering a lively debate.

The ideal pathway towards the introduction of a new instrument in clinical practice would require many different steps, starting from the assessment of the diagnostic accuracy against a reference standard and including the definition of its sensitivity to change and its relevance for prognosis and prediction of treatment effects. The feasibility and reproducibility of the tool should also be demonstrated. Moreover, to define the correct placement of each technique, strategic studies evaluating the additional value of imaging over conventional clinical management would be needed.

The applications of SMI to assess large-vessel vasculitis seems indeed to be promising, in light of a greater sensitivity over conventional Doppler techniques. Compared to other advanced ultrasound techniques, such as contrast-enhanced ultrasound (CEUS), it provides some advantages, like the possibility to assess multiple vascular sites in the same session, with no increase in costs or required time. Keeping in mind the process of validation of a new tool, there are some specific considerations arising from this clinical case. In fact, it is currently not possible to discriminate with certainty between active and inactive disease by SMI, as this would require a correlation with clinical and biological markers of disease activity and, further, with prognosis. In particular, in the setting of remission, for the predictivity over flares it would be valuable to determine a cut-off for an acceptable disease control. For the management of this patient, the positivity of a single intramural signal has been considered reasonably compatible with disease remission, however the significance of even minimal abnormalities should be taken into consideration in subsequent studies.

As future research will focus on the application of innovative ultrasonographic techniques to support the clinical management of large-vessel vasculitis, we hope to obtain the answers to the many open questions, and

that these answers will allow the addition of new instruments to the armamentarium for the treatment of such complex conditions.

G. SAKELLARIOU¹, MD, PhD
I. GIOVANNINI², MD
S. GRIGNASCHI³, MD
A. ZABOTTI⁴, MD
A. IAGNOCCO⁴, MD

¹Istituti Clinici Scientifici Maugeri, IRCCS Pavia, and Chair and Division of Rheumatology, University of Pavia;

²Rheumatology Clinic, Department of Medical and Biological Sciences, University Hospital Santa Maria della Misericordia, Udine;

³Chair and Division of Rheumatology, University of Pavia, and Division of Rheumatology, IRCCS Policlinico San Matteo Foundation, Pavia;

⁴Dipartimento Scienze Cliniche e Biologiche, Università degli Studi di Torino, Italy.

Please address correspondence to:

Annamaria Iagnocco,
Dipartimento Scienze Cliniche e Biologiche,
Università degli Studi di Torino,
AO Mauriziano di Torino,
C.so Re Umberto 109,
10128 Torino, Italy.

E-mail: annamaria.iagnocco1@gmail.com

Competing interests: none declared.

© Copyright CLINICAL AND
EXPERIMENTAL RHEUMATOLOGY 2022.

References

1. CONTICINI E, FALSETTI B, BALDI C, BARDELLI M, CANTARINI L, FREDIANI B: Superb microvascular imaging in giant cell arteritis. *Clin Exp Rheumatol* 2022; 40(4): 860-61.
2. SAKELLARIOU G, GIOVANNINI I, GRIGNASCHI S, ZABOTTI A, IAGNOCCO A: New developments in ultrasound in rheumatology: innovative tools and promising applications. *Clin Exp Rheumatol* 2021; 39(2): 413-21.
3. ITO S, TAHARA N, HIRAKATA S *et al.*: Signal intensity of superb micro-vascular imaging associates with the activity of vascular inflammation in Takayasu arteritis. *J Nucl Cardiol* 2020 ;27: 1063-5.
4. ASCHWANDEN M, SCHEGK E, IMFELD S *et al.*: Vessel wall plasticity in large vessel giant cell arteritis: an ultrasound follow-up study. *Rheumatology* 2019; 58: 792-7.