



Use of high-resolution vessel wall magnetic resonance imaging in the diagnosis of temporal arteritis

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Dear Editor,

We read with great interest the article by Keser and Aksu [1] published in *Rheumatology International*, entitled “Diagnosis and differential diagnosis of large-vessel vasculitides”, in which the authors provided an excellent review of diagnostic criteria and the differential diagnosis of Takayasu and giant cell arteritis. We would like to discuss the role of high-resolution vessel wall imaging, a magnetic resonance imaging (MRI) technique not mentioned by the authors, in the diagnosis of giant cell arteritis and secondary superficial temporal arteritis. We present two cases of temporal arteritis caused by giant cell arteritis and varicella zoster virus infection, respectively.

A 55-year-old man presented with a history of recent-onset headache that worsened when the left temporal region was touched, associated with neck and bilateral shoulder pain. Laboratory tests revealed an elevated erythrocyte sedimentation rate. The patient had no skin lesion. 3-T MRI showed no brain parenchymal alteration, and findings of brain magnetic resonance angiography were normal. High-resolution vessel wall imaging showed smooth and concentric wall thickening and enhancement of the left superficial temporal artery (Fig. 1a–c). The patient was treated with corticosteroids for presumed giant cell arteritis. He

recovered clinically, with alleviation of pain and reduction of the erythrocyte sedimentation rate.

A 60-year-old man presented with headache, reduced consciousness, and vesicular cutaneous lesions on the left side of his face. 3-T MRI showed no brain lesion, and findings of magnetic resonance angiography were normal, but the patient exhibited skin thickening in the left temporal and frontal regions. High-resolution vessel wall imaging showed concentric wall thickening and enhancement of the left superficial temporal artery (Fig. 1d–f). Polymerase chain reaction analysis of the cerebrospinal fluid showed positivity for varicella zoster virus. The patient was treated for varicella zoster virus vasculitis, using acyclovir and pulse therapy with corticosteroids. He recovered clinically, with the alleviation of headache and improvement of his level of consciousness.

High-resolution vessel wall MRI encompasses different MRI sequences that achieve sufficient resolution and contrast between the vessel wall and overlying tissue, enabling the differentiation of vascular pathologies that were uncompleted evaluated with luminal imaging [2]. This technique has been used primarily for the assessment of intracranial diseases, and is currently part of state-of-the-art MRI protocols for the detection of vascular diseases [3], enabling diagnosis and differentiation of entities such as intracranial atherosclerotic plaque, vasculitis, reversible cerebral vasoconstriction syndrome, and arterial dissection [4].

High-resolution vessel wall imaging enables the direct visualization of vessel wall inflammation and edema, showing thickening and multifocal homogeneous, smooth, intense, concentric enhancement of the vessel wall, while atherosclerotic plaques present as nonconcentric heterogeneous wall abnormalities. It can also aid the tracking of treatment response [5]. Presumably, arterial wall enhancement in patients with vasculitis is due to increased permeability of the endothelium, with contrast leakage from the lumen into the arterial wall [4].

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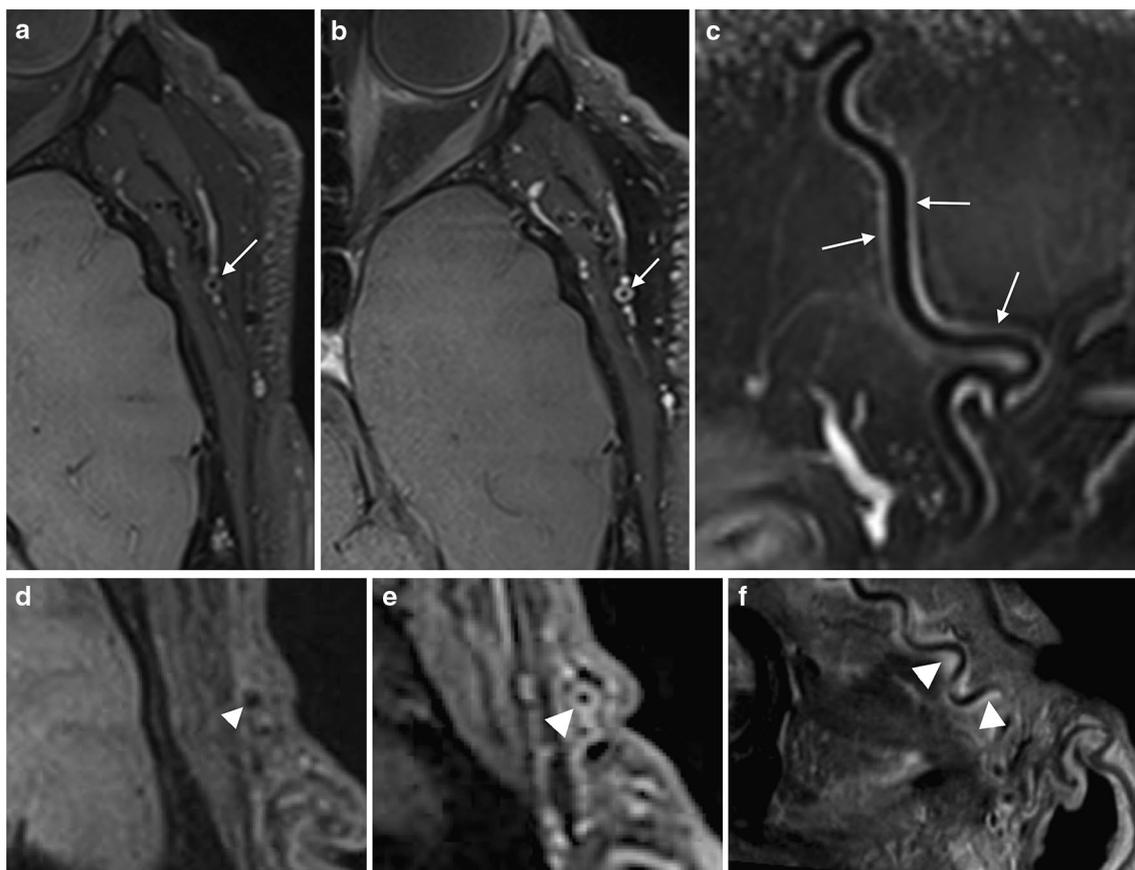


Fig. 1 Giant cell arteritis. High-resolution vessel wall imaging before (a) and after (b) intravenous contrast injection showed smooth, concentric arterial wall thickening and enhancement of the left superficial temporal artery (arrows). Multiplanar reconstruction of the high-resolution vessel wall imaging showed concentric arterial wall thickening and enhancement of the artery (c). The brain MRI and MR-angiography were normal. Left superficial temporal artery vas-

culitis secondary to varicella zoster virus infection. High-resolution vessel wall imaging before (d) and after (e) intravenous contrast injection revealed concentric wall thickening and enhancement of the left superficial temporal artery, compatible with inflammatory vasculopathy (arrowheads). Multiplanar reconstruction showed concentric arterial wall thickening and enhancement of the artery (f). Note the associated skin thickening

Although most high-resolution vessel wall imaging studies have involved the examination of intracranial vessels, this technique has also revealed alterations in giant cell arteritis (mural thickening and enhancement of the superficial temporal artery in the scalp) [6, 7]. Rhéaume et al. [7] showed that high-resolution vessel wall imaging had a sensitivity of 93.6% and specificity of 77.9% for the diagnosis of giant cell arteritis, considering biopsy as the gold standard, suggesting that this MRI technique could be used as the initial diagnostic procedure. Secondary arteritis, including vasculitis secondary to varicella-zoster infection (as in the case presented here), can also be detected by vessel wall imaging [8, 9]. Thus, high-resolution vessel wall imaging can aid in the diagnosis of vasculitis, localize active disease to guide biopsy, and even limit the need for biopsy.

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Compliance with ethical standards

Conflict of interest Diogo Goulart Corrêa declares that he has no conflict of interest. Diogo Galheigo de Oliveira e Silva declares that he has no conflict of interest. Luiz Celso Hygino da Cruz Jr. declares that he has no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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