



## The importance of vessel wall resonance in the differential diagnosis of headache in the emergency room: report of three cases

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### Introduction

Headache is a common complaint in patients who seek emergency care units. For many doctors in the emergency room, it can be difficult to determine which of these patients deserve neuroimaging, especially requesting vessel wall resonance for differential diagnosis, in order to rule out potentially serious cases.

### Objective

To describe the report of three patients complaining of headache, whose vessel wall magnetic resonance imaging demonstrated three different pathologies.

### Case report

Report of three patients treated in the emergency room of a private clinic in Fortaleza-CE, where they underwent neuroimaging exams. The first, M.S.V.S., female, 22 years old, with intense and refractory holocranial headache, whose arterial resonance performed in 2021 showed the presence of areas of small reduction in caliber, alternating with normal or slightly increased caliber, compromising the distal third of the artery basilar, left P2 segment and proximal regions of branches of the postero-superior trunk of ipsilateral M2 and M3, in addition to minimal segmental fusiform dilation in left P2, findings suggestive of reversible cerebral vasoconstriction and, secondarily, arteritis as an etiological possibility. Twenty days later, magnetic resonance angiography of the cerebral arterial vessel wall showed normalization of the areas of stenosis previously described, without thickening or parietal contrast uptake, corroborating the diagnosis of reversible cerebral vasoconstriction. Another patient, C.J.S., male, 32 years old, with occipital headache of intensity 5/10, responsive to analgesia, whose intracranial vessel wall angioresonance performed in 2019 demonstrated small areas of reduction in caliber alternating with segments of caliber normal areas of the M2 portion of the right middle cerebral artery and P2 of the left posterior cerebral artery, without showing parietal thickening or anomalous contrast uptake, considering reversible cerebral vasoconstriction as the presumed etiology. Another patient, J.M.P.M., female, 43 years old, complaining of right hemicranial headache, whose cerebral arterial and venous angioresonance, carried out in 2022, showed apparent parietal thickening with a slight heterogeneous hypersignal in the TOF sequence, with a semilunar appearance, of the distal portion of the right cervical internal carotid artery, not observing its proximal limit and not determining significant stenosis, findings that outlined the possibility of dissection. Three days later, magnetic resonance angiography of the carotid and vertebral arteries was performed, confirming the hypothesis of dissection of the right internal carotid artery.

### Conclusion

Given this, it is clear that the different spectrums of headache require attention and recognition to continue the necessary diagnostic investigation. Despite this, the majority do not require imaging tests as they are benign and self-limited episodes. It is important to note that patients over 55 years of age with new-onset headache in the temporal regions should be evaluated for temporal arteritis, and magnetic resonance imaging or magnetic resonance angiography are the preferred modalities, although they are unlikely to be performed in the emergency department. Reversible cerebral vasoconstriction syndrome, in turn, generally causes thunderclap headaches and its symptoms mimic those of aneurysmal subarachnoid hemorrhage. Imaging exams are important to confirm the diagnosis and exclude other causes, however, they are not always performed immediately. Spontaneous craniocervical dissections, in turn, can be triggered by minor activities such as coughing or cervical manipulation. The accuracy of magnetic resonance angiography and computed tomography for diagnosis is relatively similar, which is essential in the emergency context.

**Keywords:** Headache; arteritis; Cerebral vasoconstriction; Dissection of the internal carotid artery.