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Case report

Migraine with aura and stroke - the role of warning signs in the context of secondary headaches: case report

Renata Coelho Chaves Gaspar, Alex Eduardo Silva, Anderson Lubito Simoni, Renata Franzon Bonatti

Hospital das Clínicas of Federal University of Triângulo Mineiro, Uberaba, Minas Gerais, Brazil

Renata Coelho Chaves Gaspar
renata_gaspar@outlook.com

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Renato Arruda

Abstract

Introduction

Headache is a very common complaint in doctors' offices, with primary causes being the majority in relation to secondary ones. Despite this, the identification of secondary headaches is very relevant in clinical practice, since these can be a life-threatening condition, functionality or even a reversible cause. However, imaging screening for all individuals with headache is costly and unrewarding. Therefore, it is important to know the warning signs that, together with the clinical context, lead to a more precise indication of these exams and early and well-targeted therapeutic interventions.

Clinical case

This is a 60-year-old man, previously dyslipidemic and smoker, with migraine with aura reported since childhood, who underwent treatment with sodium valproate, with headache attack suppression. About 4 months before admission, he presented with an alteration in the pain pattern, *amaurosis fugax* in the right eye, dizziness and mild paresis and hypoesthesia in the left side of the body, primarily treated by him as migraine crises, without improvement with the use of triptans. A new outpatient investigation was carried out, which showed multiple small infarcts in the right hemisphere secondary to atheromatous plaque in the right carotid bulb with an obstruction of approximately 85%. Diagnostic and therapeutic arteriography was performed, with stent implantation, uneventfully.

Conclusion

The differential diagnosis between migraine with aura and a cerebrovascular event has already been widely reported in the literature and constitutes a pitfall in the routine of headaches, since a serious and potentially disabling condition can be overlooked. The joint evaluation of the alarm signs with the global context becomes an important tool in the propaedeutics of these patients, with knowledge of this casuistry being something relevant within clinical practice.

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Red flags

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Introduction

Headache is a very common complaint of patients who seek for emergency care and ambulatorial service. The correct assessment gains importance, given that one of its key points is the distinction between primary and secondary headaches, thus making knowledge of the so-called red flags for secondary headaches fundamental for the indication of adequate complementary work-up. The identification of underlying causes is important, as some can categorize risk to the patient's life or functionality, or even constitute a treatable cause and, therefore, reversible.[1]

It is estimated that up to 18% of headache patients worldwide have secondary causes.[2] In Brazil, it is estimated that 1% of headaches seen in Primary Care have an underlying etiology.[3] In tertiary centers and emergency rooms around the world, this incidence seems to be increased.[4]

Secondary headache is defined as any headache that is caused by an underlying intracranial pathology that is capable of causing headache and that there is a temporal relationship between the pain and the pathological condition.[5] Several causes may be attributable, which may vary according to the epidemiological profile of each patient. International guidelines proposed the expanded acronym SNNOOP10 to facilitate the memorization of the main secondary etiologies (Systemic symptoms, Neoplasm, Neurologic dysfunction, Onset of headache, Older age, Pattern change, Positional Headache, Precipitated by sneeze, cough or exercise, Papilledema, Progressive, Painful eye, Pregnancy or puerperium, Posttraumatic, Pathology of immune system, Painkiller overuse).[1,6]

Headaches can be a symptom present in several types of acute stroke.[5,7] In addition, conditions in which headache is a proeminent symptom increase the risk of an ischemic or hemorrhagic cerebrovascular event.[8]

Primary headaches do not have a strong association with cerebrovascular pathology, with the clear exception of migraine with aura.[9] This is an independent risk factor for stroke, both during and remotely after an attack. The aforementioned relationship is more common in young patients, however it has also been noted in older patients with atherosclerotic disease of large vessels or heart disease.[10]

There is a greater preponderance in females, however, studies carried out with a male population have found that men with migraine with aura have a significantly increased cardiovascular risk compared to those without a history of this headache. There was also a greater number of cerebral ischemic events in migraine patients younger than 55 years compared to patients without the disease.[11]

In view of the above, risk stratification based on evidence from patient history data, findings from general and neurological physical examinations, social and family history, and demographic data, together with the finding of red flags for secondary headaches, lead to further evaluation of the patient.

Clinical case

This is a 60-year-old male patient, peviously a smoker (40 pack-years) and dyslipidemic, in addition to suffering from depression and migraine with aura since childhood. His daily medications were Quetiapine 200 mg/day, Divalproex Sodium 500 mg at night; risperidone 1mg at night; ASA 100 mg once a day, rosuvastatin 70 mg at night. The usual pattern was a throbbing frontal headache of strong intensity, associated with nausea, vomiting and malaise, photophobia and phonophobia. His aura was of the visual type, with shimmering scotomas. He underwent previous treatment with preventive medication (with psychiatric indication too) — Divalproex Sodium — without any seizures since he was 45 years old. He was admitted to the HC-UFTM Adult Emergency Service in March 2022 due to a condition that started 4 months before, characterized by a change in the pain pattern, with severe pain (9/10 on the numerical pain scale), continuous, frontal radiating to the back of the neck. This condition was associated with scintillating scotomas in the left eye, amaurosis fugax in the right eye, low visual acuity in the right and dizziness in frequent crises of very short duration. He also reports a slight hypoesthesia and paresis on the left side of his body. He did not initially value the symptoms, as he believed it was a return of the migraine attacks, resorting to abortive medications (triptans) on his own, however, without improvement. The patient sought specialized neurologic care, being evaluated and requested a brain MRI, which showed several punctiform foci of recent infarcts distributed throughout the right cerebral hemisphere and sequelae at the base of the left cerebellar hemisphere, as shown in figure 1.

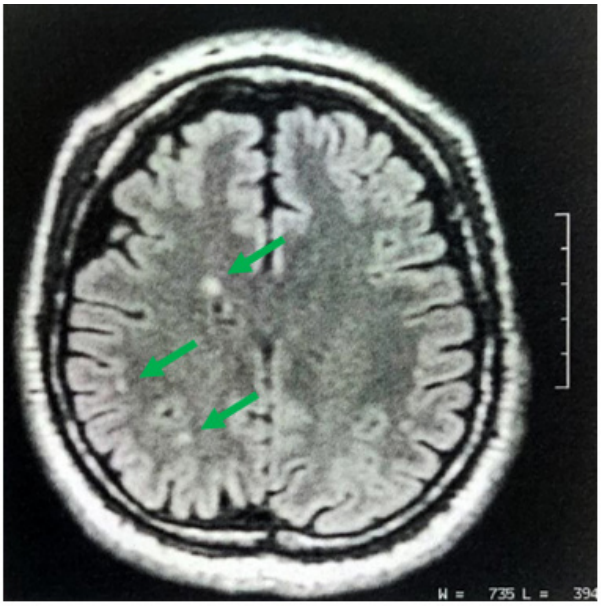

Figure 1. Brain MRI, showing three acute infarcts in the right cerebral hemisphere.

A Doppler ultrasound of the carotid and vertebral arteries was requested, which showed significant obstruction in the right carotid artery by an atherosclerotic plaque associated with a recently formed thrombus in its center (with significant flow obstruction, greater than 90%), and was therefore referred to vascular surgery service.

An angiotomography of the cranial and cerebral arteries was performed, showing in the right carotid bulb a hypodense and regular plaque with a longitudinal extension of 12 mm, determining obstruction of up to 85% at the origin of the right internal carotid artery. On the left, it had irregular hypodense plaques determining obstruction of less than 50%. With these results, there was an indication for an urgent surgical approach, being so referred to our service.

On admission to our service in March/2022, the patient was hemodynamically stable. He reported headache of moderate intensity at the time and nausea. The general physical examination showed no carotid murmur or other abnormalities on palpation of the pulses, and during the neurological examination, he complaint about scintillating scotomas in temporal visual field of right eye, mild paresis of the right upper limb, secondary to previous trauma, according to the patient and reduced pain sensitivity on the left side of his body, with a NIH Stroke total score of 1. On the following day, he was submitted to a cerebral arteriography, opting, during the procedure, for angioplasty with implantation of a drug-eluting stent in the right internal carotid artery without complications. He was later transferred to the Coronary ICU to continue the postoperative treatment.

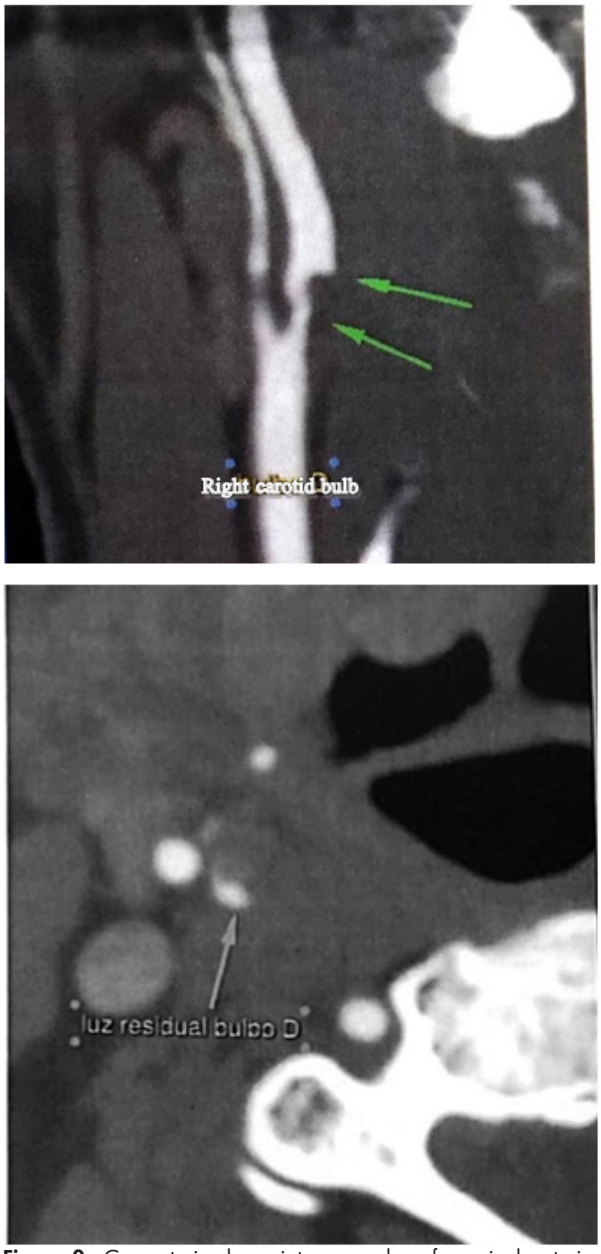

Figure 2. Computerized angiotomography of cervical arteries demonstrating significant stenosis of the right carotid bulb (arrows).

He presented arterial hypotension without response to volume expansion and with the need to use low doses of vasoactive drugs (dopamine), but with progressive weaning in about 48 hours. After clinical and hemodynamic stability, he was transferred to the ward, being discharged home

the next day, maintaining outpatient follow-up. He returned about 30 days after discharge, with no new complaints or clinical-surgical intercurrences, opting to maintain previous medication, which already included high-potency statins and dual antiplatelet therapy with acetylsalicylic acid 100 mg daily and clopidogrel 75 mg daily.

Discussion

In many cases, the diagnostic differentiation between the neurological signs attributable to migraine and those referring to a cerebrovascular event becomes a challenge. In the case presented, the patient himself attributed his symptoms to a long-standing migraine condition, which made him think of a visual aura only. We even believe that the episodes of amaurosis fugax on the right with scintillating scotomas on the left could be vascular events secondary to embolism and concomitant with the aura.

The alarm signs were shown in a classic way: change in the pattern of pain in a patient over 50 years old, with new focal neurological deficits that mimicked an migraine aura. Headache is a common symptom of ischemic stroke and TIA, but it is often obscured by other neurological signs and symptoms, reaching a prevalence of 27%. However, this number may be higher, since the studies exclude aphasic patients, with lowered level of consciousness and confusion.[8]

In general, pain is more associated with cortical than subcortical infarcts and is also more present in extensive infarcts, however, linked to other neurological symptoms. Pain symptoms tend to be ipsilateral to the infarction; however, they can be diffuse and nonlocalized, with a wide variability of symptoms in terms of pain onset, characteristics, location, and duration. Posterior circulation infarcts tend to present more severe pain than other circulations.[2,12]

The prognostic significance is still not well established, however there is a tendency to be associated with better evolution of patients after an ischemic event.[13,14] However, even though the stroke that led our patient to hospital was a small one, he had an etiological diagnosis with the potential for incapacitation or even death (severe obstruction of the carotid bulb), which emphasizes the prompt and complete etiological investigation of this patient profile.

The physician must have a broad view of each case, always taking into account the global context of the patient, not just isolated specific symptoms, since, given that this is a previous smoker and middle-aged patient with migraine , suspicion of cerebrovascular disease should be raised.

We can conclude that the evaluation of not just one, but a set of alarm signs in the clinical context of the patient becomes a valuable tool for the diagnosis of secondary causes. This brings a healthy propaedeutic strategy to the patient with chronic or new onset headache. Knowledge of classic cases of headache with secondary causes becomes essential when it generates greater suspicion in the clinician and is also important for guiding people with chronic headaches regarding the signs and symptoms that indicate the search for specialized medical assistance or emergency service as soon as possible.

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Renata Coelho Chaves Gaspar
https://orcid.org/0000-0002-1672-5220
Alex Eduardo Silva
https://orcid.org/0000-0002-0999-0165
Anderson Lubito Simoni
https://orcid.org/0000-0002-9937-9676
Renata Franzon Bonatti
https://orcid.org/0000-0001-7452-2563

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