ACTA MÉDICA PORTUGUESA
A Revista Científica da Ordem dos Médicos

CASO CLÍNICO

Recurrent Syncope During Migraine Attacks

Síncopes Recorrentes Durante Crises de Enxaqueca

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Acta Med Port (In Press) ▪ https://doi.org/10.20344/amp.22134

ABSTRACT

Migraine is a cyclic condition with attacks consisting mainly of intense headaches, sensory intolerance, and nausea or vomiting. Loss of consciousness during attacks is often attributed exclusively to a neurally mediated reflex to pain, although it may also be due to migraine's autonomic impairment, with cardiac conduction abnormalities, probably in relation to a degree of reduced sympathetic function. We report the case of a 51-year-old woman presenting episodes of syncope exclusively after vomiting during migraine attacks. A 24-hour Holter monitoring performed during a migraine attack disclosed an intermittent complete atrioventricular block coincident with an episode of syncope. The patient was implanted with a pacemaker without further syncopes on subsequent attacks. This case highlights the importance of clinical suspicion and investigation of syncope during migraine attacks. Recurrent syncope during migraine should not be attributed to pain to avoid misdiagnosis and ensure the treatment of other important causes of syncope.
Keywords: Atrioventricular Block; Migraine Disorders/complications; Syncope

RESUMO

A enxaqueca inclui manifestações episódicas entre as quais a cefaleia, intolerância a estímulos sensoriais, náuseas e vómitos. Os episódios de alteração de consciência durante as crises de enxaqueca são por vezes atribuídos exclusivamente à dor, podendo também ter relação com a disautonomia da enxaqueca, nomeadamente cardíaca, com alterações da condução auriculoventricular, provavelmente em relação com hipoativação simpática. Descrevemos o caso de uma mulher de 51 anos com síncopes de repetição que ocorriam exclusivamente após o vómito durante crises de enxaqueca. O Holter 24 horas realizado durante uma crise documentou um bloqueio auriculoventricular completo, coincidente com episódio de síncope. Foi implantado um *pacemaker* definitivo, sem recorrência. Este caso sublinha a importância da suspeita clínica e investigação de síncope que ocorre durante crises de enxaqueca. Síncopes recorrentes durante crises de enxaqueca não devem ser atribuídas por rotina à dor, garantindo o diagnóstico diferencial e orientação terapêutica atempados.
Palavras-chave: Bloqueio Atrioventricular; Perturbações da Enxaqueca/complicações; Síncope

INTRODUCTION

Migraine is considered a chronic disorder, in many cases accounting for a profound impact in individuals' lives. The spectrum of attack manifestations is large and variable among patients, and occasionally, patients present with atypical symptoms such as syncope, defined as a transient loss of consciousness due to cerebral hypoperfusion during the attacks.[1]

Migraine has been associated with a higher prevalence of epilepsy and syncope.[1,2] The occurrence of syncope has mostly been attributed to a vasovagal parasympathetic mechanism triggered by pain, but its pathophysiology is not completely understood.[1] Rarely, cardiac autonomic nervous system (ANS) impairment during migraine may lead to heart conduction abnormalities, being another possible causal factor for syncope.[3]

CASE DESCRIPTION

A 51-year-old female patient had a history of episodic migraine without aura since her twenties. Migraine attacks consisted of parieto-occipital throbbing pain with photophobia, phonophobia, and osmophobia. The attacks did not include unilateral tearing, rhinorrhea, or conjunctival injection. Migraine occurred six days per month for the last year, with each attack lasting up to 24 hours.

Since her forties, the attacks also always included nausea, and, in at least half of them, the patient complained of vomiting. She had tried different oral preventive treatments (topiramate and flunarizine) and was currently stable under valproic acid 250 mg/daily as prophylaxis. She had never been given propranolol as a preventive treatment. As an abortive treatment, the patient was taking eletriptan 40 mg as needed. She did not take anti-emetics or other drugs with ANS activity.

The patient had a history of cardiac ablation at 31 years old due to atrioventricular nodal reentry nodal tachycardia and was considered cured, with a follow-up electrocardiogram (ECG) depicting sinus rhythm with no need for further follow-up. There was no family history of neurological or cardiac disease.

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Recebido/*Received*: 30/07/2024 - **Aceite/*Accepted*:** 16/09/2024 - **Publicado *Online*/*Published Online*:** 28/11/2024

In 2021, she reported more than ten episodes of brief and sudden loss of consciousness during six months. These episodes occurred exclusively during migraine attacks and after vomiting and had no warning. There was no relation with migraine pain level, nor did the episodes happen when the patient vomited for other reasons, such as gastroenteritis. There was no association with involuntary movements, tongue biting, urinary incontinence, or post-episode drowsiness or confusion. The patient denied autonomic symptoms in between attacks, such as lightheadedness, visual blurring, or palpitations.

An ECG performed in the interictal period was normal. A 24-hour Holter monitoring was performed, and it happened to coincide with a migraine attack. It disclosed a transient complete atrio-ventricular (AV) block (with a pause of up to 10 seconds – Fig. 1), associated with an episode of syncope.

Cardiac enzymes, echocardiogram, and cardiac magnetic resonance imaging were unremarkable, and there was no evidence of other conduction abnormalities. The patient was implanted with a double-chamber pacemaker, and despite repeated vomiting, there was no syncope recurrence in subsequent attacks.

DISCUSSION

Syncope requires a broad differential diagnosis that includes reflex or neurally mediated syncope (including vasovagal syncope due to pain, fear, or standing for a long time; situational syncope in relation to coughing, vomiting, or sneezing); syncope due to orthostatic intolerance, cardiac syncope (in relation to cardiac arrhythmias or cardiac structural disease); epileptic seizures; and psychogenic manifestations.[4]

We describe a rare case of syncope that was due to an intermittent complete atrioventricular block occurring exclusively during migraine attacks in a patient with no evidence of structural heart disease, normal interictal ECG, no previous history of hypertension or coronary artery disease, no previous family history of cardiac disease, and who was effectively treated with cardiac pacing.

A relationship between current events and the patient's cardiac ablation twenty years ago is highly unlikely, if not impossible, as complete AV block is a rare immediate complication of cardiac ablation presenting only days to weeks after the procedure.[5]

In the general population, cardiac syncope occurs in approximately 40% of patients with newly diagnosed AV block.[6] Autonomic nervous system impairment in migraine has been previously described and can include, among others, cardiac manifestations. There have been a few observational studies on cardiac autonomic impairment in migraine patients. Most of them evaluated patients in between attacks, with scarce results during migraine attacks. In the interictal period, results have been inconsistent and mixed, although most studies reported probably a degree of reduced sympathetic function in migraine patients. One study evaluated 10 patients during a migraine attack and was not able to demonstrate any differences regarding cardiac autonomic reflexes during the ictal phase.[7] In this case, we hypothesize that syncope may have a cardiac origin due to cardiac sympathetic hypofunction during the migraine crises.

On the other hand, syncope in this patient always occurred after vomiting. Therefore, we cannot exclude a situational syncope component due to parasympathetic transient hyperactivity with increased vagal tone.[4]

No direct effect on the ANS has been associated, to date, with triptans, valproic acid, or statins. As such, an iatrogenic component for syncope in this case is an unlikely possibility.[8-10]

Cardiac pacing was the chosen treatment in this patient. Although some cardiologists do prefer cardioneuroablation as a first-line treatment for vagal syncope, especially in younger patients, there are still no clinical trials assessing its efficacy against standard treatment such as pacemaker implantation.[11]

Prompt detailed history-taking, physical examination, and ancillary studies should be sought out when in suspicion of syncope occurring during migraine attacks. If cardiac conduction abnormalities are documented, a multidisciplinary approach, including a cardiologist consultation and prolonged monitoring attempting to coincide with an attack, may be necessary for adequate and effective treatment.[4,12]

This report adds to the knowledge on clinical presentations of rare and serious cardiac conduction abnormalities due to ANS impairment during migraine attacks, which clinicians should be aware of. We highlight the importance of performing additional investigation of syncope in migraine, preferably during migraine attacks; otherwise, treatable cardiac manifestations could be missed.

PREVIOUS AWARDS AND PRESENTATIONS

Sociedade Portuguesa de Cefaleias' 2023 Spring meeting.

AUTHOR CONTRIBUTIONS

All authors contributed equally to this manuscript and approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

FUNDING SOURCES

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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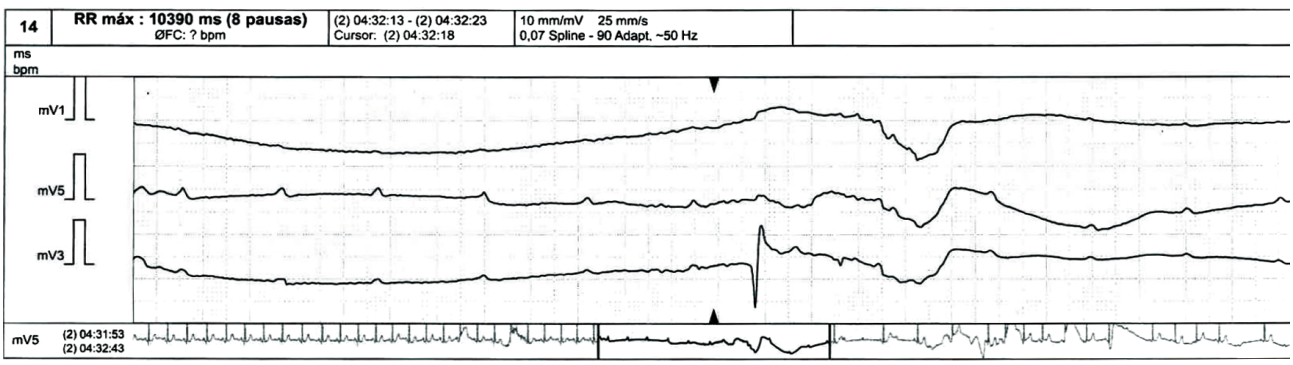

Figure 1 – 24-Holter monitoring during a migraine attack disclosing a period of intermittent complete atrioventricular block, with P waves with no relationship with QRS complexes, lasting up to 10 seconds, after vomiting and coincident with syncope