

Migraine associated recurrent vertigo

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Summary

The relationship between migraine and vertigo is well known. Migraine patients may suffer different types of vertigo: Meniere disease, basilar-type migraine with vertigo as an aura, benign positional vertigo and migraine associated recurrent vertigo (MARV). MARV is one of the most prevalent vertigo in migraine patients, included as a common cause of recurrent spontaneous vertigo in the neurotological literature. MARV is an entity with its own clinical pattern, pathophysiology and treatment. Differential diagnosis should be done with benign positional vertigo, Meniere disease and basilar type migraine. Specific diagnosis criteria could help in its recognition and management.

Key words: Migraine associated recurrent vertigo, migraine, vertigo, classification, treatment.

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Introduction

The International Classification of Headache Disorders is becoming the most important reference document for the management of headache patients (1). Include several migraine related symptoms or syndromes as migraine related seizure or cyclic vomiting syndrome, but not the migraine associated recurrent vertigo (MARV)?

The relationship between vertigo and migraine is well-known since the initial description in 1873 (2). It has gone beyond the scientific field reaching the literature in the exciting Julio Cortaza's short tale titled "Cefalea" (3). Although migraine patients may suffer different types of vertigo (**table 1**), MARV has its own specific clinical features. It is the third cause of consultation for vertigo in a general neurology outpatient clinic (4) and is included as a common cause of recurrent spontaneous vertigo in the neurotological literature (5). MARV is an entity that needs its own place in the International Classification of Headache Disorders.

TABLE 1. Types of vertigo in migraine patients.

Migraine associated recurrent vertigo

Basilar type migraine

Benign positional vertigo

Meniere disease

Benign paroxysmal vertigo of the childhood

Delimiting MARV

MARV differs from other vertigos present in migraine patients and from other types of recurrent vertigos. Most migraine patients experience instability or poor balance sensation during migraine attacks. This multifactor symptom is not vertigo and it differs radically from MARV, where patients suffer motion illusion during the episodes.

The differential diagnosis with benign positional vertigo (BPV), (6) a type of vertigo with an increased incidence in migraine patients (possibly related with utriculus ischemia) (7-8) is necessary. There are two critical differences: MARV attacks last for hours or even days opposed to BPV characterized by short episodes of vertigo lasting seconds or minutes; and BPV is a postural induced vertigo that may be induced by positional-provoked manoeuvres.

The lack of auditory symptoms is crucial to distinguish MARV from Meniere disease (MD). MD uses to have otological symptoms during the attacks and in the late phase the patients develop a sensorineural deafness. An increase incidence of MD in migraine patients has been reported. Even though a genetic relationship between both entities or an induced mechanism by lowering the "clinical" threshold could justify this association, it is difficult to explain it from a pathophysiology or biological plausibility approach. It is possible that some MD patients were misdiagnosed cases of MARV.

MARV is not a basilar type migraine (BTM). The aura of BTM, typically precede the migraine attack, opposed to MARV where there is not a temporal relationship with the migraine. Florid aura symptoms of BTM are lacking in MARV that may be also associated with migraine without aura (1). MARV not only differs from BTM in the clinical spectrum but also in the longer duration of the vertigo attacks.

Assuming the relevance of cortical spreading depression, and trigeminal nociception in the pathophysiology of migraine, it's well known the trigeminal innervations of the crista ampullaris, and there are cortical regions that projects to the brainstem vestibular complex (9-10). The release of neuropeptides into the vestibular peripheral cells or in the vestibular nucleus could precipitate and maintain the vertigo. Even this neuropeptides could sensitized the vestibular system and justify the subclinical vestibular alteration shown in migraine patients (11). Other explanation of vertigo in migraine patients is the cortical spreading depression. It has been described vertigo episodes as an epileptic symptom and vertigo is one of the features of BTM (1, 12). And finally both syndromes share some features: Are recurrent and chronic, the episodes last from hours to days, and both could be the result of peripheral or/and central neuronal mechanisms.

Neurons in lateral and medial vestibular nucleus respond to serotonin increasing the firing rate and autoradiographic studies confirm the presence of 5-HT 1 and 5-HT2 receptors in the rat vestibular nucleus (13, 14). There are evidences about the participation of glutamate and calcitonin gene-related peptide in the vestibular nerve fibres (15). The presence of those receptors and neurotransmitters bring nearer again migraine and MARV. There is some controversy about the peripheral or central origin of MARV. The duration of the episodes lasting even days without compensation, the lack of hypoacusia, fullness or tinnitus and the improvement with triptans or migraine-preventive drugs uphold the central-origin hypothesis.

MARV responds to several migraine-preventive drugs (16-20). Topiramate seems to be an option reducing the frequency of the vertigo attacks (18). Flunarizine has shown to be an effective treatment for MARV (16-17). As a personal communication valproic acid also works well in these patients. Acetazolamide a drug effective in familial hemiplegic migraine and episodic ataxia type 2 may be also a useful option in both MARV and migraine with aura (11, 21). The vertigo attacks seem to respond to triptans (22).

Waking through the diagnostic criteria.

Tables 2, 3 and 4 show the proposed diagnosis criteria divided by definitive, probable and possible.

TABLE 2. Migraine associated recurrent vertigo criteria for definitive (modified from Porta-Etessam (23)):

- A. Headache fulfilling IHS criteria 1.1 Migraine without aura or criteria 1.2 Migraine with aura.
- B. At least 5 vertigo attacks fulfilling criteria C-H
- C. Vertigo attacks lasting from 30 minutes to 14 days
- D. Absence of hearing loss
- E. Absence of tinnitus or fullness
- F. The vertigo can not be induced by postural manoeuvres.
- G. No other neurological symptoms or signs during the attacks and symptom free between attacks
- H. No attributed to another disorder.

TABLE 3. Migraine associated recurrent vertigo criteria for probable (modified from Porta-Etessam (23)):

- Headache fulfilling IHS criteria 1.1 Migraine without aura or criteria 1.2 Migraine with aura.
- At least 5 vertigo attacks that fulfilling all but one 3 criteria C-F and fulfil G and H criteria.
- Vertigo attacks lasting from 30 minutes to 14 days
- Absence of hearing loss
- Absence of tinnitus or fullness
- The vertigo can not be induced by postural manoeuvres.
- No other neurological symptoms or signs during the attacks and symptom free between attacks
- No attributed to another disorder.

TABLE 4. Migraine associated recurrent vertigo criteria for possible (modified from Porta-Etessam (23))

- First degree-relative fulfilling IHS criteria 1.1 Migraine without aura or criteria 1.2 Migraine with aura.
- At least 5 vertigo attacks that fulfilling C-H criteria.
- Vertigo attacks lasting from 30 minutes to 14 days
- Absence of hearing loss
- Absence of tinnitus or fullness
- The vertigo can not be induced by postural manoeuvres.
- No other neurological symptoms or signs during the attacks and symptom free between attacks
- No attributed to another disorder.

Conclusions

MARV is an entity that has its own clinical pattern, pathophysiology and treatment. Differential diagnosis should be made with benign positional vertigo, Meniere disease and basilar type migraine. Specific diagnosis criteria could help in its recognition and management.

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