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BRIEF REPORT

Headaches related to triptans therapy in patients of migrainous vertigo

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Abstract Dizziness and vertigo are frequently reported by patients with migraine. In migrainous vertigo (MV), vertigo is causally related to migraine. Patients of MV usually have an attenuated or absent headache with their vertigo as compared with their usual headache of migraine. Here we report three female patients of MV in which administration of triptan was associated with induction (two patients) or exacerbation (one patient) of headache with disappearance of vertigo. We suggest that headache and vertigo of migraine may be inversely related to each other and suppression of one may induce or aggravate the other.

Keywords Dizziness · Vertigo · Migraine · Triptans · Migrainous vertigo

Introduction

Symptoms of migraine and vertigo frequently co-exist. Vertigo in migraine patients may be in two forms: either both symptoms (migraine and vertigo) may co-occur in the same patient as different entities or vertigo may be an integral part of migraine. In order to differentiate migraine and vertigo as integral phenomena of a single disorder from simply co-morbid symptoms, Neuhauser et al. [1] developed criteria to define migrainous vertigo (MV) and classified it as definite MV and probable MV. Treatment of MV currently parallels that of migrainous headache. We report three cases of MV in which administration of triptans was associated with induction or exacerbation of headache.

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Case descriptions

Patient 1

A 24-year-old woman presented with a 1-year history of episodic spontaneous vertigo of moderate to severe intensity (interfering with routine activities and requiring bed rest), 2–4 times per month, lasting 60 min to 2 days. She never experienced deafness, tinnitus, diplopia, visual disturbances, dysarthria, dysphagia, numbness or difficulty with gait during any episode of vertigo. The patient had no history of head trauma. The patient had history of migraine headache without aura (fulfilling IHS criteria) for 10 years. However, she had only three to four migraine episodes over the last 2–3 years. The patient could not recall any correlation of episodes of vertigo to episodes of migrainous headache (which she used to feel in the previous 10 years). On further questioning, the patient admitted to having mild headache during one-fifth of vertigo attacks. There was occasional photophobia, phonophobia and nausea during the episodes of vertigo. The patient identified sleep irregularities and fasting as triggering factors for her vertigo. Her mother was a migraineur. The clinical impression was MV. We started sumatriptan 50 mg as prophylactic therapy for moderate to severe attacks of MV. After 3 weeks, she reported severe headache during episodes of vertigo on two occasions. The patient recognized the headache as those she had been suffering previously during an episode of migraine headache (severe, throbbing, holocephalic, and

with nausea, phtophobia and phonophobia). The patient took sumatriptan about 2 h after the onset of vertigo in each episode (when it became severe). Headache started 45 min after the intake of sumatriptan and lasted for 6 h. The headache was not accompanied by hot sensation, tingling, flushing or feeling of pressure in any limb. However, her vertigo subsided on both occasions. We considered this headache as part of MV and changed sumatriptan to rizatriptan (10 mg). Patient reported a similar type of headache with disappearance of vertigo on two further occasions. Repeat clinical examinations and investigations were normal. We put the patient on propranolol 60 mg bid as prophylactic therapy and paracetamol (500 mg) as abortive therapy. She had six mild attacks of vertigo (without headache) in the 12 months follow-up. The patient took paracetmol (500 mg) during two of these mild vertigo attacks. She did not feel any effect of the paracetamol intake on the duration and severity of vertigo, in comparison to another four attacks where she did not use paracetamol.

Patient 2

A 42-year-old female presented with a 2-year history of episodic spontaneous vertigo of mild to moderate intensity (at times interfering with routine activities), one to two attacks per month, lasting 15 min to 12 h. Photophobia, phonophobia and nausea were present in about one-half of vertigo attacks. Attacks were not associated with headache, deafness, tinnitus, dysartharia, dysphagia, visual disturbances, numbness or difficulty with gait. Prior history of headache and trauma was absent. Her mother was a migraineur. Sleep irregularities and stress were noted as precipitants for vertigo. Clinical examinations and investigations (including MRI brain) were normal. The clinical impression was probable MV. Patient was advised rizatriptan 10 mg as abortive therapy for moderate to severe attacks of vertigo. After 6 weeks she reported headache, on two occasions, starting 1 h after use of rizatriptan (she took rizatriptan after 2–3 h of onset of vertigo when it became severe). The headache was pulsatile, holocephalic, severe and persisted for about 10 h. There was no other associated symptom. However, vertigo subsided on both occasions. The patient responded to propranolol 40 mg bid as prophylactic therapy. She had four attacks of vertigo of mild intensity (without headache) at the 10 months follow-up.The patient refused to take any drug as abortive therapy.

Patient 3

A 30-year-old woman presented with a 6-year history of migraine attacks without aura (fulfilling criteria of IHS) with frequency of one to two per month. She consulted in our neurological outpatient clinic for a change in the character of migraine attacks for the past 6 months. She had associated vertiginous feeling (of moderate intensity) in almost all the attacks in the 6 months. The patient recognized other associated symptoms (nausea, vomiting photophobia and phonophobia), trigger factors (sleep irregularities, stress and fasting) and duration of attacks (2–10 h) as those she had been suffering previously during attacks of migraine, except for attenuated headache intensity. Neurological examination and MRI brain were normal. She fulfilled the criteria of definite MV. We started sumatriptan 50 mg as abortive therapy for moderate to severe attacks of vertigo. After 6 months she reported five episodes of MV. Each episode was associated with mild headache from the beginning of the vertiginous feeling. Two episodes of MV showed significant improvement with sumatriptan in 2 h. In these two episodes, her headache (which was mild from the beginning) subsided in 2 h and the intensity of vertigo reduced to a mild grade in the same duration. Mild vertigo persisted for about another 6 h. However, treatment in another three episodes resulted in marked attenuation of vertiginous feeling with increased intensity of headache (severe, holocephalic and throbbing), after 1 h of administration of sumatriptan and persisted for about 8 h (she took sumatriptan when vertigo was severe, about 3–4 h after the onset of symptoms).

Discussion

Migrainous vertigo is relatively common, but underdiagnosed in the general population [2]. The lifetime prevalence of MV is 0.98% and the 12-month prevalence 0.89 % [2]. Vertigo or dizziness is experienced by 51.7% of migraine patients [3]. The diagnosis of MV is a clinical one. The role of investigations is primarily to exclude other differential diagnosis. Patients with MV may experience attacks of vertigo both with and without headache. Less than half of the patients show fixed association of vertigo and headache. Some patients experience an attenuated headache with their vertigo as compared with their usual migraine [1, 3]. Patient number 1 and 3 fulfilled the criteria of definite MV (of Neuhauser et al.)[1]. Our second patient had no history of any significant headache in her life. However, she fulfilled the criteria of probable MV.

The published evidence for treatment of MV is weak. The only controlled study on the efficacy of oral triptans (zolmitriptan) was inconclusive [4]. However, case reports and observational studies demonstrated beneficial effects of sumatriptan on vertigo in patients of migrainous vertigo [4, 5]. We opted for a trial of oral triptan (as abortive therapy) after obtaining informed consent.

All drugs used for the treatment of headache, including triptans, may cause medication-overuse headache in

patients with primary headache disorders. However, it is difficult to report headache as a side effect of a drug used as an abortive treatment during an attack of headache. Even meta-analysis of triptans have not reported headaches as side effects [6]. One study reported aggravations of migraine and migraine symptoms such as nausea, vomiting, photophobia and phonophobia as one of the common adverse events after treatment with sumatriptan nasal spray [7]. However, causal relation of headache aggravation after sumatriptan spray was not ascertained in that study. Transient aggravation of headache by triptans has been reported in few studies [8].

Temporal relation of headaches with triptans in our patients indicates that triptans were pivotal in triggering the attacks. Of course, the possibility of coincidence of the two events, headache and triptan intake, cannot be completely excluded. Moreover, the different responses to triptans in these MV patients reinforce the idea that vertigo could represent a simple co-occurrence or an integral part of migraine (MV) attack

Dizziness and/or vertigo is one of the common central nervous system (CNS) adverse events of triptans [9]. Goadsby et al. [10] propose that few CNS side effects may represent the unmasking of disease-related symptoms when headache is relieved, and it may not be direct effects of the drug. Kolevo [11] demonstrated the disappearance of headache (and induction of vertigo) by stimulation of the vestibular system with cold irritation of the ear during migraine attacks. From these two observations, it may be inferred that an inverse relationship exists between headache and vertigo of migraine. Absence of headache or markedly attenuated headache during most of the vertiginous episode of MV further strengthens this view (of inverse relationship). Various hypotheses have been proposed for MV, all of which are derived from presumed pathophysiology of migraine [12]. Many authors have proposed that episodes of vertigo associated with migraine could be explained on the basis of vasospasm of the internal auditory artery [12]. Abnormal distension of meningeal blood vessels and consequent activation of the trigeminal neuron system, the principal pathophysiolgy of headache of migraine [6], is exactly opposite to the pathophysiology of the proposed hypothesis of vertigo (i.e., vasospasm of the artery). It means that suppression of headache may induce or aggravate vertigo or vice versa. Headache and dizziness are not reported as side effects of various triptans over placebo in healthy volunteers [13]. Marano et al. [14] suggest that painful trigeminal stimulation can induce an imbalance of the vestibular system in migraine patients and possibly explain predisposition to vertigo. It is hard to define the exact mechanism of suppression of vertigo and induction of headache in our patients. We suggest that neuromodulation by triptan of the link between the vestibular and trigeminal system may be the reason for the inverse relationship and possible explanation of headache in our patients. However, it is hard to define the exact mechanisms of neuromodulation (as we lack any hypothesis in literature).

Triptans typically elicit vasoconstriction [6]. However, there are reports of small but significant vasodilatation by sumatriptan, especially of small-sized vessels [15]. Aggravations of migraine after triptan administration have been explained by this vasodilator property of sumatriptan [16]. This vasodilator property of triptans may be another explanation for the induction (or aggravation) of headache in our patients.

Review of literature and our observations suggest that aggravation or appearance of headache in patients of MV may be one of the adverse events of triptans. Further studies are essential to know whether headache aggravations or appearance of headache in MV patients are attack-related events, patient-related effects or drug-related events. Investigation of the pathophysiology of MV, systematic evaluation of triptans and other drugs in patients of MV, and better understanding of the relationship between headache and dizziness in patients of migraine and MV, will probably solve the problem.

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Conflicts of interest None.

References

1. Neuhauser H, Lempert T (2004) Vertigo and dizziness related to migraine: a diagnostic challenge. Cephalalgia 24:83–91
2. Neuhauser HK, Radtke A, von Brevern M, Feldmann M, Lezius F, Ziese T, Lempert T (2006) Migrainous vertigo: prevalence and impact on quality of life. Neurology 67(6):1028–1033
3. Vukovic V, Plavec D, Galinovic I, Lovrencic -Huzjan A, Budišić M, Demarin V (2007) Prevalence of vertigo, dizziness, and migrainous vertigo in patients with migraine. Headache 47:1427–1435
4. Brandt T, Strupp M (2006) Migraine and vertigo: classification, clinical features, and special treatment considerations. Headache Current 3(1):12–19
5. Evans RW, Baloh RW (2001) Episodic vertigo and migraine. Headache 41:604–605
6. Saxena PR, Tfelt-Hansen P (2006) Triptans, 5 HT1B\1D receptors agonists in the acute treatment of migraines. In: Olesen J, Goadsby PJ, Ramadan NM, Tfelt-Hansen P, Welch KMA (eds) The headaches, 3rd edn. Lippincott Williams & Wilkins, Baltimore, pp 469–503
7. Diamonds S, Bkind A, Jackson T, Ryan R, DeBussey S, Asghamejad M (1998) Multiple-attacks efficacy and tolerability of sumatriptan nasal spray in the treatment of migraine. Arch Fam Med 7:234–240
8. Burstein R, Jakubowski M, Levy D (2005) Anti -migraine action of triptans is preceded by transient aggravation of headache caused by activation of meningeal nociceptors. Pain 115:21–28

9. Dodick DW, Martin V (2004) Triptans and CNS side effects: pharmacokinetics and metabolic mechanisms. Cephalalgia 24:417–424
10. Goadsby PJ, Dodick DW, Almas M, Diener H-C, Tfelt-Hansen P, Lipton RB, Parsons B (2007) Treatment-emergent CNS symptoms following triptan therapy are part of the attack. Cephalalgia 27:254–262
11. Kolev O (1990) How caloric vestibular irritation influences migraine attacks. Cephalalgia 10(4):167–169
12. Baloh RW (2006) Migraine and vertigo: epidemiology, genetics, and mechanism(s). Headache Curr 3(1):1–7
13. van der Post J, Schram MT, Schoemaker RC, Pieters MSM, Fuseau E, Pereira A et al (2002) CNS effects of sumatriptan and rizatriptan in healthy female volunteers. Cephalalgia 22:271–281
14. Marano E, Marcelli V, Di Stasio E, Bonuso S, Vacca G, Manganelli F et al (2005) Trigeminal stimulation elicits a peripheral vestibular imbalance in migraine patients. Headache 45:325–331
15. Elhusseiny, Hamel E (2001) Sumatriptan elicits both constriction and dilation in human and bovine brain intracortical arterioles. Br J Pharmacol 132:55–62
16. Hargreaves R (2007) New migraine and pain research. Headache 47(suppl-1):26–43