STM JOURNALS

Research & Reviews: A Journal of
Neuroscience

ISSN: 2277-6427 (Online)
ISSN: 2348-7925 (Print)
Volume 14, Issue 1, 2024
DOI (Journal): 10.37591/RRJoNS

http://medicaljournals.stmjournals.in/index.php/RRJoNS/index

Case Study RRJoNS

Underdiagnosis of Underlying Migraine in Benign Paroxysmal Positional Vertigo

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Abstract

Migraine and vestibular migraine are the primary cause of headache in general population world widely. The prevalence shows that 1 in 10 people have migraine. Majorities of headache causes are undiagnosed properly and usually treated for symptomatic treatment without following correct guidelines. Standard treatment options for migraine include acute relief, lifestyle strategies, alternative remedies, and prophylactic drug. Most patients are managed in primary care using painkiller in many cases without proper management and consultation by specialist. In this case, Stu spinning sensation diagnosed of underlying migraine, 30 years old Malay lady with history of resolved right BPPV but unfortunately still complaint of persistent headache and dizziness after several weeks. Typical symptoms of BPPV such as spinning sensation , vomiting are resolved after 1–2 weeks post menstrual period. Detailed history and clinical evaluation was done and she was diagnosed vertigo as vestibular migraine and proper migraine prophylaxis was started using Amitriptyline and Metoprolol. After several weeks of therapy, the symptoms started to improve.

Keywords: Migraine, prophylaxis, vestibular, headache, symptomatic treatment, primary care

INTRODUCTION

Migraine is a one of the common neurological diseases that cause a variety of symptoms; most notably a throbbing, pulsing headache on unilateral side of your head. Symptoms are likely to exacerbate with physical exertion, exposure to light, stress, and sensitivity to sounds or smells. The duration of these symptoms may extend for at least 4 h, if not days. Studies indicate that it ranks as the 6th most incapacitating ailment globally. Improper management reliant solely on pain management without proper prophylaxis will not adequately address the condition [1, 2].

Migraine, a prevalent neurobiological headache disorder stemming from heightened excitability in the central nervous system, stands as one of the most debilitating medical conditions worldwide. Diagnosis hinges on the characterization of headaches and associated symptoms, with its societal impact extending to diminished quality of life and disruption of work, social engagements, and familial interactions. The economic repercussions are considerable. Acute and preventive treatments, ranging from specific medications like triptans and ergots to non-specific analgesics, offer varying degrees of relief. Triptans are particularly recommended for severe cases, while preventive measures aim to reduce migraine frequency and enhance overall well-being. Ongoing developments in treatment options offer optimism for those grappling with uncontrolled migraines, signaling potential improvements in management strategies [3].

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Received Date: December 03, 2023
Accepted Date: January 23, 2024
Published Date: April 19, 2024

Citation: Zuraida Zainun, Muhammad Munzir Zuber Ahmadi. Underdiagnosed of Underlying Migraine in Benign Paroxysmal Positional Vertigo. Research & Reviews: A Journal of Neuroscience. 2024; 14(1): 11–15p.

Vestibular migraine, impacting 2.7% of the US population, often faces challenges in diagnosis, with misidentification being common. Despite its prevalence, the pathophysiology remains unclear, though recent research indicates the expression of calcitonin gene-related peptide in the audio vestibular periphery, a factor implicated in migraine headaches. A notable placebo-controlled trial examining metoprolol for vestibular migraine was prematurely halted due to recruitment issues, with no discernible differences observed between treatment arms upon completion. Apart from common symptoms, diverse audio vestibular indications such as ringing in the ears, loss of hearing, a feeling of fullness in the ears, ear pain, and sinus-related symptoms have been associated with migraine. Furthermore, there is a correlation between migraine and an increased likelihood of developing otologic disorders such as Meniere's disease, vestibular loss, Benign Paroxysmal Positional Vertigo, and sudden sensorineural hearing loss. Recent findings indicate that patients may undergo variations in hearing loss and a sense of ear fullness without experiencing vertigo, a condition referred to as cochlear migraine. This expanding understanding highlights the intricate relationship between migraine and diverse audio vestibular phenomena [4].

Several internationally recognized diagnostic criteria exist for various vestibular disorders, including benign positional paroxysmal vertigo, Meniere's disease, bilateral vestibulopathy, vestibular paroxysmic, and functional dizziness. The differentiation between central and peripheral causes of acute vestibular syndrome can often be rapidly determined through a thorough history and clinical examination. The concept of "cerebellar vertigo" is deemed clinically significant. Balance training has proven effective in the treatment of bilateral vestibulopathy, while preventive treatment with betahistine for Menière's disease has not demonstrated superiority over a placebo. Oxcarbazepine has shown efficacy in the treatment of vestibular paroxysmia. Functional dizziness, a challenging condition, may benefit from treatments such as vestibular rehabilitation, cognitive behavioral therapy, and serotonin reuptake inhibitors, all considered potentially effective interventions for this complex disorder. These observations enhance our overall comprehension of diagnostic standards and therapeutic strategies for various vestibular disorders [5].

The collaborative efforts of the vestibular and headache communities have resulted in a consensus definition of vestibular migraine, marking a significant stride towards fostering research and raising awareness among clinicians. Identified as the most prevalent cause of spontaneous recurrent vertigo, vestibular migraine's diagnosis, initially rooted in epidemiological evidence, has gained robustness through a recent 9-year cohort follow-up. Beyond its diagnostic entity, vestibular migraine reveals intricate connections with migraine and vestibular dysfunction, showcasing a myriad of potential interactions and links.

Conditions like Meniere's disease, benign paroxysmal positional vertigo, anxiety, and motion sickness, which coexist with migraine, form a intricate network, emphasizing the necessity for a comprehensive understanding of the interactions between migraine and vestibular disorders. This collaborative definition and exploration of associations are crucial for advancing research and enhancing clinical awareness in this domain [6].

Vestibular migraine (VM) is acknowledged as a leading cause of spontaneous episodic vertigo, ranking as the second most common contributor to vertigo. Despite its prevalence, the absence of a biomarker and a complete understanding of its pathophysiology have resulted in VM being underrecognized and underdiagnosed. This study emphasizes the urgent need for definitive diagnostic criteria, as the lack thereof hinders accurate identification. Meanwhile, clinicians are advised to meticulously distinguish VM from similar diseases to enhance diagnostic precision and reduce misdiagnosis rates. The study presents findings from a PubMed search, employing various terms related to vestibular migraine, and offers a comprehensive overview of diagnostic criteria and potential differentials. Diagnosis of VM hinges on evaluating symptoms, including the degree, frequency, and duration of vestibular episodes, alongside a thorough history of migraine. An essential factor is the

temporal connection between migraine symptoms and vestibular episodes observed in at least 50% of cases, coupled with the imperative task of excluding other possible causes. Beyond vestibular and migraine symptoms, associations with transient auditory symptoms, nausea, vomiting, and motion sickness susceptibility further characterize VM. Distinguishing vestibular migraine (VM) from various conditions like Meniere's disease, benign paroxysmal positional vertigo, migraine with brainstem aura, vestibular neuritis, posterior circulation ischemia, multiple lacunar infarction, vestibular paroxysmia, motion sickness, and episodic ataxia type 2, is crucial. This comprehensive approach aims to guide clinicians in improving diagnostic rates and refining the differentiation of VM from its various mimicking conditions [7].

The acknowledgment of vestibular migraine as a unique diagnostic entity, recognized by both the Barany Society and the International Headache Society, resulted from years of accumulating evidence. Numerous reports highlighted a significant prevalence of vestibular symptoms in individuals with migraine headaches and vice versa, establishing the need for a comprehensive understanding of this interplay. Despite having established diagnostic criteria for vestibular migraine, challenges persist due to variations in the character of dizziness, the presence or absence of clearly defined attacks, the duration of attacks, and the temporal correlation between headache or migrainous features and vestibular symptoms. The complexity of diagnosing vestibular migraine is heightened by the overlap of symptoms with other causes of dizziness, particularly Ménière's disease and benign paroxysmal positional vertigo (BPPV). This study thoroughly covers the demographics, epidemiology, clinical manifestations, physical examination findings, laboratory testing, comorbidities, treatment options, and pathophysiology of vestibular migraine. Emphasizing the need for controlled treatment trials, the study underscores the urgent requirement for both clinical and basic science research efforts to enhance our understanding of the condition's pathophysiology. Ultimately, this integrated approach is crucial for advancing diagnostic accuracy and treatment strategies for vestibular migraine [8].

The study included 40,682 individuals with migraines (25.5% males, 74.5% females) and 162,728 controls (25.5% males, 74.5% females). The incidence of benign paroxysmal positional vertigo (BPPV) was significantly higher in the migraine group (6.0%) compared to the control group (2.3%). Migraine was associated with an increased risk of BPPV, with an adjusted hazard ratio of 2.54 (95% CI, 2.41–2.68). Subgroup analysis revealed a statistically significant elevation in BPPV incidence across all age groups and both genders within the migraine group compared to controls. The highest incidence of BPPV was observed in men under 40 years, with an adjusted hazard ratio of 4.49 (95% CI, 3.05–6.62). The hazard ratio decreased with increasing age in both men and women. This suggests a noteworthy association between migraine and an elevated risk of developing BPPV, with particular prominence in younger males [9].

Vertigo and dizziness can exhibit various connections to migraine, including causal relationships, statistical associations, or, at times, mere coincidence. Migraines vertigo (MV) is recognized as a vestibular syndrome resulting from migraine, marked by episodes of spontaneous or positional vertigo that can last from seconds to days, coupled with migraineurs symptoms. Despite being the leading cause of spontaneous recurrent vertigo, it is currently not included in the International Headache Society's classification of migraine. Statistical associations exist between migraine and benign paroxysmal positional vertigo (BPPV) as well as Ménière's disease (MD), but the underlying pathogenetic links remain unclear. Additionally, motion sickness is more prevalent among individuals with migraines compared to controls. Familial hemiplegic migraine may lead to persistent cerebellar symptoms over time. Additionally, the occurrence of dizziness among individuals with migraines may be linked to orthostatic hypotension, anxiety disorders, or major depression, conditions that are more prevalent in this population. This complex interplay highlights the multifaceted nature of the relationship between migraine and various vestibular and dizziness-related conditions [10].

CASE REPORT

A 30-year-old Malay lady with history of resolved right BPPV last week, who was having recurrent headaches since young age. The headache worsened throughout last year after seeking treatment from a few GPs. It was associated with nausea, lethargy, photophobia, phonophobia and vomiting. Physical examination was done which showed no neurologic deficit. MRI was done and was found normal. She was started on migraine prophylaxis for few weeks. Symptoms and the frequency of attack reduced after several weeks of migraine prophylaxis using Amitriptyline and Metoprolol. Therefore, she managed to decrease the quantity of painkillers she was taking.

DISCUSSION

Frequent migraines can significantly impact daily functioning and diminish the overall well-being of those affected. It is advisable to contemplate preventive measures for all migraine patients following the onset of acute migraines. The goal of prophylactic therapy is to reduce the occurrence, intensity, and duration of migraine episodes. Additionally, such therapy can enhance the effectiveness of acute migraine treatments and enhance overall quality of life. It is important to note that prophylactic treatment does not offer a cure, and the majority of patients will still require abortive medications for managing acute migraines [11].

The pathophysiological mechanism remains uncertain, with some theories proposing spontaneous overactivity and abnormal amplification in pain, particularly sensory pathways, in the brainstem, leading to migraines. Present research leans towards a predominantly neural origin, involving feedback loops through the innervation of cranial arteries in the Trigeminovascular system. The effectiveness of most drug treatments is associated with a shortage of 5-hydroxytryptamine (5-HT). Ongoing studies are investigating the relationship between calcium channel irregularities and peptides like calcitonin gene-related peptide. This association occurs closer than 5-HT which may benefit treatment in the future [12].

CONCLUSION

A precise identification of migraines is essential for successful treatment and enhanced quality of life. Clinicians must conduct a thorough examination, considering patient history, physical assessments, and diagnostic criteria. Early intervention, guided by a combination of acute and preventive medications, lifestyle adjustments, and patient education, is key to managing symptoms and enhancing the well-being of migraine patients.

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