

RESEARCH ARTICLE

ASSOCIATION OF COMMON TYPES OF HEADACHES WITH VESTIBULAR IMPAIRMENT AND NECK PAIN IN ELDERLY

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ABSTRACT

Background: Headache is a commonly reported condition with its most prevalent types including migraine, cervicogenic (CGH) and tension type headache (TTH). The headache is associated with vestibular impairment (VI) and neck pain, but this association has not been studied in elder population. **Objective:** To determine the association of common types of headaches with vestibular impairment and neck pain in elderly. **Methods:** A cross sectional study was conducted from February 2021 to June 2021 at District Headquarters Hospital Narawal using a non-probability convenience sampling technique on n=140 participants. The inclusion criteria include age above 50 years, able to ambulate independently, complaint history of common type of headache. Headache was assessed clinically based on diagnostic criteria. The head impulse test was used to assess the vestibular function. The neck pain presence was asked through close ended question with binary response. The chi-square (χ^2) test used for association between the variables. **Results:** The mean age of the participants was 58.17 ± 7.14 years. The tension type headache was seen in n=76 (54.2%), migraine in n=33 (23.5%) and cervicogenic headache in n=31 (22.1%) patients. Vertigo was seen in n=52 (37%) patients and neck pain in n=82 (58%) patients. A significant association of vestibular impairment with migraine (Chi square value= 7.79, p=0.02) and cervicogenic headache (Chi square value= 6.12, p=0.04). While no significant association with tension type headache (Chi square value= 0.97, p=0.04). All type of headache were significantly associated (p<0.05) with neck pain. **Conclusion:** The vestibular impairment and neck pain are associated with all type of headache, except tension type headache where vestibular impairments are not associated. There was an association between types of headaches and neck pain.

Keywords: Cervicogenic headache, migraine, neck pain, tension type headache, vestibular impairment.

INTRODUCTION

A painful sensation in the head region is called headache that originates in a specified portion, sometimes at the posterior of the head, on each side of the head, in the region of forehead, or it may be in the eye region. In generalized headache pain occupy the whole head region¹. According to the WHO, ten top disabling conditions include headache as one of the disabling diseases. Globally 46% of the population is affected with active headache². Headache is classified into two main subdivisions, primary headaches, i.e., patients having no underlying cause of having this pain. Another type is secondary headaches, in which patients have specific etiology in reference to the International Classification of Headache Disorders (ICHD-3)³.

Vestibular Impairment (VI) is a non-specific complaint that primary health care providers frequently encounter, with prevalence estimates ranging from 11.1 to 28.9 percent⁴. It manifests as dizziness, unsteadiness, spinning sensations, and disorientation⁴. According to new research, headache sufferers with dizziness have varying

degrees of peripheral and central VI. Some mechanisms responsible for this impairment are vestibule-cerebellar loss of inhibition, central vestibular network misfiring, and peripheral disease exacerbating central hypersensitization⁵.

Dizziness and imbalance are two of the most prevalent symptoms of VI among the elderly, and due to accidental falls these are considered public health concerns⁶. VI and falls are most prevalent and morbid in the elderly⁷.

In headache sufferers, head and neck pain is common finding⁸. Different aspects of Neck pain, including as pericrania muscular discomfort, myofascial transferred pain from neck muscles, and upper cervical spine joint dysfunction, have been linked to headache in adults. Although migraine pain is most commonly felt in the trigeminal nerve's ocular distribution, a significant number of migraines have reported discomfort in the neck and occiput during their episodes⁹. Psychiatric comorbidities, sleep difficulties, abuse of headache abortive drugs, and obesity are all modifiable risk factors that lead to transformation from episodic to chronic forms¹⁰.

There are many people who suffer from headaches and had symptoms of VI and neck pain. So it is critical to understand the association between types of headache and vestibular impairment as well as neck pain. This study was conducted to determine the association of types of headaches with VI and neck pain in elderly population.

METHODOLOGY

A cross sectional study was conducted from October 2020 to August 2021. The study was carried out at the District Headquarters Hospital Narowal. The study's protocol was approved by ethical review committee of Riphah College of rehabilitation & allied health sciences Islamabad with a Reference RIPAH/RCRS/REC/00815. Each patient participant signed a written informed consent form.

The Nonprobability convenience sampling was used for sample collection. A total of n=140 individuals were included in the study. The inclusion criteria include age above 50 years, both genders, able to ambulate independently, complaint/ history of common type of headache. The subject having any systematic illness, cognitive impairment, hypoglycaemia, neurodegenerative disease, viral infection (meningitis, encephalitis), disorder of stance and gait, psychiatric disorder, drug intoxication were excluded from the study.

Before data collection each participant signed a written informed consent. Afterward a questionnaire containing demographics was filled by each patient. The type of headache was assessed clinically based on symptoms, location, origin, associated and exacerbating factors. Aside from the more uncommon and optional symptoms like autonomic disturbances, dizziness, phono photophobia, monocular visual blurring, and difficulty swallowing, diagnostic criteria for the headache include unilateral head pain, symptoms and signs of neck involvement, non-clustering episodic moderate pain originating in the neck then spreading to the head, and response to root or nerve blockade¹¹.

In Tension-type headache (TTH) was diagnosed on following characteristics low to moderate diffused Pain, pulsation, or exacerbation by physical activity. The aura or neurological signs are not discernible. Light, noise, and odor sensitivities are usually

absent or mild. In the chronic form, nausea may be present, but vomiting is never noticed¹². While in migraine, headache aura may be present with different severity level. There may be both photophobia and phono-phobia, which may cause nausea and vomiting. The cervicogenic headache (CGH) can be unilateral or bilateral with restricted range of motion (ROM) in the neck, ipsilateral shoulder and arm discomfort may be aggravated by neck positioning or posture and the positive cervical flexion test is the diagnostic criteria of CGH.

The head impulse test was performed on each patient to assess the vestibular impairment (VI). The presence of neck pain was asked through close ended question "Do you suffer from neck pain?" with the answer of YES for presence and NO The assessment of the neck pain was made with the question that "Do you suffer from neck pain?" with the answer of YES for presence and NO for the absence. The demographic data was presented with n(%), mean±SD. To find the association between the types of headaches with VI and neck pain in the elderly, the Chi-square (χ^2) test was used. The data was analyzed using SPSS version 23 and the level of significance was set at p<0.05.

RESULTS

The mean age of the participants was 58.17 ± 7.14 years range from 50 to 80 years. In the sample gender distribution is equal, n=70 male and n=70 female respectively. Among n=140 participants, n=76 (54.28%) were diagnosed with tension-type headache, n=33 (23.5%) were diagnosed with migraine, and n=31(22.1%) with Cervicogenic headache and vertigo was seen in n=52 (37.1%) patients. Association of types of headaches with vestibular impairment was determined by using chi-square. Analysis shows that there is an association common type of headache with VI.

A significant association of vestibular impairment with migraine (Chi square value= 7.79, p=0.02) and cervicogenic headache (Chi square value = 6.12, p=0.04). While no significant association with tension type headache (Chi square value= 0.97, p=0.04). All type of headache were significantly associated (p<0.05) with neck pain.

Table 1: Association of common types of headaches with vestibular impairment and neck pain

Type of Headache	Total	Vertigo				Neck pain			
		Present	Absent	X ²	p-value	Present	Absent	X ²	p-value
Migraine	33 (23%)	18 (13%)	15 (10%)	7.79	0.02*	18 (13%)	15 (10%)	7.79	0.02*
Tension Type Headache	76 (54%)	22 (16%)	54 (38%)	.97	0.62	35 (25%)	41 (29%)	6.12	0.04*
Cervicogenic Headache	31 (22%)	12 (9%)	19 (14%)	.12	0.04*	29 (21%)	2 (1%)	13.47	0.001**

Level of significance: $p < 0.001$ ***, $p < 0.01$ ** , $p < 0.05$ *

DISCUSSION

The purpose of this study was to find the association of types of headaches with VI and neck pain in the elderly. The data analyses show there is an association of cervicogenic headache (CGH) and migraine with VI, while no association was seen with tension type headache (TTH). There is an association of neck pain with cervicogenic headache, tension type headache, and migraine which is statistically significant. When comparing current results to those of the older studies, it must be pointed out that the association was more evident in the migraine patient, which is supported by the study of lamp et al., which states that there is an association between migraine and vertigo¹³. The migraine and vestibular problems coexist which sometimes is referred as vestibular migraine¹⁴.

An association of these two variables is well reported by the study of G.Akdal et al. and concluded that dizziness exists in more than half of the headache patients; however, the relation was strong with migraine than TTH and CGH¹⁵. This research supported the current study results in this respect that the headache with dizziness is more common in females and with migraine than other types of headache. Migraine has an association with vertigo, and its prevalence increases with age; Anne studied this. H et al. and this point supported the present study¹⁶.

In this study head impulse test (HIT) was used to assess the vestibular impairment (VI). This test was done in all the participants, but more positivity was seen in patients with vertigo. In the present study, the association though is analyzed with types of headaches and showed the association was more evident in the migraine because migraine often coexists with vertigo, so indirectly, the association was found between the VI and HIT. KP weber researched the vestibulo-ocular reflex (VOR) deficits evaluation with HIT and concluded that HIT with high velocity revealed VOR deficits better.

Hence in the light of this study, the HIT could be a test for evaluating VI¹⁷.

S. Ashina et.al also found that neck pain is a common complaint in the general population but more prevalent with the TTH and migraine. These findings support the results of the present study¹⁸. A.H. Calhoun study had the same finding relating to the relation of migraine with neck pain¹⁹. A review article stated that the neck is the origin of pain and causes pain in a headache known as cervicogenic headache. This article proves that neck pain has a relation with cervicogenic headache as in the present study²⁰. In 2018 Sunil.p et al. conducted a study to find the association of neck pain with migraine and found that neck pain is the common feature of migraine and there is an association between these two conditions²¹.

Due to covid-19 pandemic patient were reluctant to perform the physical test. It was hard to perform the maneuvers on the patient with proper SOPs .Further studies should be performed on elderly because headache has more prevalence in elderly population and VI is also common so more risk factors should be studied. Association of headaches with VI should be studied with large sample size.

CONCLUSION

The vestibular impairment and neck pain are associated with all type of headache, except tension type headache where vestibular impairments are not associated. There was an association between types of headaches and neck pain. Future study large sample size while controlling some confounding variable may provide more detail about association between types of headaches with vestibular impairment and neck pain.

REFERENCES

1. Almesned IS, Alqahtani NG, Alarifi JA, Alsaawy TN, Agha S, Alhumaid MA. Prevalence of primary headache among medical students at king Saud bin Abdulaziz University for health sciences, Riyadh, Saudi Arabia. Journal of family

- medicine and primary care. 2018;7(6):1193-96. doi: 10.4103/jfmpc.jfmpc_240_18
2. Murtaza M, Kisan M, Daniel H, Sonawalla AB. Classification and clinical features of headache disorders in Pakistan: a retrospective review of clinical data. *PloS one*. 2009;4(6):e5827.1-8. doi.org/10.1371/journal.pone.0005827
 3. Nowaczewska M, Wiciński M, Straburzyński M, Kaźmierczak W. The Prevalence of Different Types of Headache in Patients with Subjective Tinnitus and Its Influence on Tinnitus Parameters: A Prospective Clinical Study. *Brain sciences*. 2020;10(11):776.1-13. doi.org/10.3390/brainsci10110776
 4. Lystad RP, Bell G, Bonnevie-Svendsen M, Carter CV. Manual therapy with and without vestibular rehabilitation for cervicogenic dizziness: a systematic review. *Chiropractic & manual therapies*. 2011;19(1):1-11. doi.org/10.1186/2045-709X-19-21
 5. Chan TL, Hale TD, Steenerson KK. Vestibular Lab Testing: Interpreting the Results in the Headache Patient with Dizziness. *Current neurology and neuroscience reports*. 2020;20:1-10. doi.org/10.1007/s11910-020-01036-4
 6. Iwasaki S, Yamasoba T. Dizziness and imbalance in the elderly: age-related decline in the vestibular system. *Aging and disease*. 2015;6(1):38-47. doi:10.14336/AD.2014.0128
 7. Agrawal Y, Merfeld DM, Horak FB, Redfern MS, Manor B, Westlake KP, et al. Aging, Vestibular Function, and Balance: Proceedings of a National Institute on Aging/National Institute on Deafness and Other Communication Disorders Workshop. *The Journals of Gerontology: Series A*. 2020;75(12):2471-80. doi.org/10.1093/gerona/glaa097
 8. Blaschek A, Decke S, Albers L, Schroeder AS, Lehmann S, Straube A, et al. Self-reported neck pain is associated with migraine but not with tension-type headache in adolescents. *Cephalalgia*. 2014;34(11):895-903. doi.org/10.1177/0333102414523338
 9. Lampl C, Rudolph M, Deligianni CI, Mitsikostas DD. Neck pain in episodic migraine: premonitory symptom or part of the attack? *The journal of headache and pain*. 2015;16(1):1-5. doi.org/10.1186/s10194-015-0566-9
 10. Ashina S, Lyngberg A, Jensen R. Headache characteristics and chronification of migraine and tension-type headache: A population-based study. *Cephalalgia*. 2010;30(8):943-54. doi.org/10.1177/0333102409357958
 11. Sjaastad Ø, Blom A, Austad R, Øen E. Plasma progesterone in reindeer in relation to ovariectomy and hysterectomy. *Acta Veterinaria Scandinavica*. 1990;31(1):45-51. doi.org/10.1186/BF03547576
 12. Kaniecki RG. Tension-type headache. *Headache and Migraine Biology and Management*. 2015:149-60.
 13. Lampl C, Rapoport A, Levin M, Bräutigam E. Migraine and episodic Vertigo: a cohort survey study of their relationship. *The journal of headache and pain*. 2019;20(1):1-5. doi.10.1186/s10194-019-0991-2
 14. Balaban CD, Black RD, Silberstein SD. Vestibular neuroscience for the headache specialist. *Headache: The Journal of Head and Face Pain*. 2019;59(7):1109-27. doi.10.1111/head.13550
 15. Akdal G, Özge A, Ergör G. The prevalence of vestibular symptoms in migraine or tension-type headache. *Journal of Vestibular Research*. 2013;23(2):101-6. doi:10.3233/VES-130477
 16. Calhoun AH, Ford S, Pruitt AP, Fisher KG. The point prevalence of dizziness or vertigo in migraine—and factors that influence presentation. *Headache: The Journal of Head and Face Pain*. 2011;51(9):1388-92. doi:10.1111/j.1526-4610.2011.01970.x
 17. Weber K, Aw S, Todd M, McGarvie L, Curthoys I, Halmagyi G. Head impulse test in unilateral vestibular loss: vestibulo-ocular reflex and catch-up saccades. *Neurology*. 2008;70(6):454-63. doi:10.1212/01.wnl.0000299117.48935.2e
 18. Ashina S, Bendtsen L, Lyngberg AC, Lipton RB, Hajiyeva N, Jensen R. Prevalence of neck pain in migraine and tension-type headache: a population study. *Cephalalgia*. 2015;35(3):211-9. doi.org/10.1177/0333102414535110
 19. Calhoun AH, Ford S, Millen C, Finkel AG, Truong Y, Nie Y. The prevalence of neck pain in migraine. *Headache: The Journal of Head and Face Pain*. 2010;50(8):1273-7. doi:10.1111/j.1526-4610.2009.01608.x
 20. Becker WJ. Cervicogenic headache: evidence that the neck is a pain generator. *Headache: The Journal of Head and Face Pain*. 2010;50(4):699-705. doi.10.1111/j.1526-4610.2010.01648.x
 21. Pradhan S, Choudhury SS. Clinical characterization of neck pain in migraine. *Neurology India*. 2018;66(2):377. doi:10.4103/0028-3886.227302

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