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# MIGRAINOUS VERTIGO AND PSEUDOVERTIGO IN MIGRAINE WITHOUT AURA, AT A HEADACHE CLINIC

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## ABSTRACT

**Background:** Migrainous vertigo is a known phenomenon, which was recently defined, but still poorly understood in our local scenario, mostly ignored and considered as pseudo vertigo (because of high co morbidity of migraine with anxiety and depression) or basilar type migraine by health care providers. We aimed to determine the frequency and characteristics of patients having migrainous vertigo vs. pseudovertigo along with migraine without aura, in a headache clinic for the first time in Pakistan. **Methods:** 100 consecutive patients suffering from migraine without aura for atleast one year were selected and enrolled. Migraine without aura was defined according to ICHDII R1 criteria. These patients were evaluated for dizziness according to a structured questionnaire. Subjects were divided into groups namely (i) migrainous vertigo (MV), (ii) pseudo vertigo / dizziness but not true vertigo, (iii) no dizziness. Their respective frequencies, demographics and symptom characteristics were also recorded. This was a cross sectional observational study. Data analysis was performed through SPSS version 11.5. **Results:** The frequency of dizziness was found to be 60 %. The frequency of MV and pseudo vertigo was equal at 30 % each. In definite MV and pseudovertigo groups female to male ratio was 14:1, and 2:1 respectively. Patients with age below 18 years had a low frequency of MV. Most common symptom was illusion of movement of surroundings (83.3 %).

**Conclusions:** Migrainous vertigo is a distinct symptom of migraine and not an aura. It occurs frequently in migraine without aura; however pseudovertigo is also equally common in our clinics. There is marked female preponderance in MV, while it seems to affect children and adolescents less frequently.

**Key Words:** Migraine, migraine without aura, dizziness, vertigo.

## INTRODUCTION

Dizziness commonly occurs with migraine. Studies indicate the frequency of dizziness reaching up to 51.7 % in migraine sufferers.<sup>1</sup> But dizziness is a difficult symptom to evaluate clinically as it is a subjective feeling of the patient and many non-vertiginous symptoms are commonly labeled as dizziness by the patient. Patients having dizziness actually have either of the two i) vertigo, or ii) pseudovertigo. Vertigo is defined as a subjective feeling of movement or rotation of self or surroundings. Patients who do not have any feeling of rotation but still claim to have dizziness are difficult to classify, we label such patients as having pseudo vertigo. Such patients usually have symptoms of orthostatic intolerance, panic attacks or hyperventilation.

Migrainous vertigo (MV) is one of the many forms of

vertigo that can occur with migraine. This peculiar form of vertigo has been known to occur since long.<sup>2-8</sup> However it was mostly ignored and was not considered by the medical fraternity as a distinct entity. Only in the last decade, this entity was classified and defined clinically. Prevalence of migrainous vertigo was found to vary from 9 % to 23 % in specialty clinics<sup>1,8</sup> and 0.98 %<sup>9</sup> in population based studies. It was also found that patients having migrainous vertigo have a much more impaired quality of life as compared to those with simple migraine<sup>9</sup>. Moreover, several case series, which have included up to 100 patients, provide evidence that this episodic vertigo can occur even in the absence of headache.

However, MV as yet is difficult to recognize, at times debated, still mostly ignored and thus remains undiagnosed. Many clinicians are still not convinced as the vertigo being referred to might be an aura of basilar



type migraine, in which vertigo is well known to occur with migraine headache.<sup>10</sup>

To resolve the above mentioned issues, and answer the clinical question that whether this vertigo is an aura or a separate migrainous symptom, we aimed to find out the frequency of MV only in patients having migraine without aura. We also aimed to find out characteristics of patients who have pseudo vertigo and claim to be dizzy.

## MATERIALS AND METHODS

Patients having headache were referred from different sources to the Headache clinic at Neurology department Civil Hospital Karachi, Dow University of Health Sc during the period of 6 months from 5th February 2008 to 4th August 2008. This was an observational cross sectional study.

All the patients having migraine without aura according to IHS criteria (ICHD II R 1)<sup>11</sup> for at least one year and did not suffer from any other neurological disease or any known otological condition were selected

Patients having any form of headache other than migraine without aura (e.g., migraine with aura, basilar type migraine, tension type headache) or having any other neurological or otological disease (eg, Menier's disease, Benign Paroxysmal Positional Vertigo, vertiginous epilepsy) were excluded from the study.

Thus a total of 100 patients fitted these criteria. These subjects were asked if they felt dizziness with their headache. For this the commonly used word in local language "chakar" was used. Those patients who did not suffer from dizziness were said to be having no dizziness, while those with dizziness / chakar were further divided into i) migrainous vertigo and ii) pseudovertigo after being interviewed with informed consent. The interview was according to a carefully designed questionnaire, which was based on validated interviews for migrainous vertigo.<sup>12</sup>

For the purpose of this study dizziness, definite migrainous vertigo and pseudo vertigo were defined as follows:

**Dizziness:** Patients with complain of chakar, a word in locally used urdu language which is equivalent to dizziness

Patients with dizziness having the following characteristics were labeled as having definite migrainous vertigo

Thus based on responses patients with dizziness were labeled as suffering from migrainous vertigo or pseudo vertigo. Patients were thus divided into three groups: 1) Definite Migrainous vertigo, 2) Pseudo vertigo, 3) No dizziness

All the collected data were analyzed through computer using SPSS version 11.5.

The patients were stratified according to the diagnostic categories as well as age and gender. Frequencies in terms of proportion/percentages of patients in the above mentioned groups and in their respective age and gender categories were calculated. Difference between proportions was determined by chi-square test with level of significance < 0.05 was considered as significant.

## RESULTS

A total of 100 patients who had migraine without aura were selected. Regarding the demographic characteristics of these 100 subjects suffering from migraine without aura 75 (75%) were female patients and 25 (25%) were male patients with a female to male ratio of 3:1. The age varied from 5 to 65 years with mean 30.5 years  $\pm$  11.7 years.

More than half of the selected patients (60 %) reported to be suffering from dizziness. Although there was a preponderance of females as compared to males among the dizziness suffering migraineurs (80 %) this difference was not statistically significant, when compared with migraineurs having no dizziness ( $p > 0.05$ ). Similarly distribution in different age categories was found to be statistically non-significant ( $p > 0.05$ ) between dizziness suffering and dizziness free migrainiers

There were 30 patients each in definite migrainous vertigo group as well as that of pseudovertigo, thus frequency was same i.e., 30/ 100 (30%) in each of these groups .

In the category of definite migrainous vertigo an overwhelming majority (93.3 %) of the patients were females as compared to males (see table 1), the female to male ratio reaching up to 14:1. This difference was found to be statistically significant ( $p < 0.05$ ). The age varied from 16 to 65 years, mean age was 33.6 years  $\pm$  11.1. We found too few children and adolescent (18 years and below), suffering from definite migrainous vertigo (see figure 1) however their statistical significance could not be calculated as there were very few patients with definite MV (n=2) in this age group. When broader age categories were made (see table 1) there was no statistically significant



difference between younger and older age groups ( $p > 0.05$ ).

In the category of pseudo vertigo females were still in majority (66.7 %) as compared to males (see table 1). The female to male ratio was 2:1, this difference was found to be significant ( $p < 0.05$ ). The age varied from 5 to 64 years mean  $30.5 \pm 11.6$  years. The difference in age distribution (see table 1) as compared to rest of the patients was not significant ( $p > 0.05$ ).

Regarding clinical characteristics of definite migrainous vertigo (see table 1) the most common symptom was an illusion of movement of surroundings (83.3%), while 40 % of patients complained of feeling of self-motion that was severe.

## DISCUSSION

Our study is the first one in Pakistan that evaluates the dizziness profile of patients suffering from migraine. The female to male ratio of our sample of 100 patients was 3:1 which is similar to that found in patients suffering from migraine as evaluated in most international studies.<sup>13</sup> We have found a much higher frequency of dizziness (for one year) i.e., 60 % in migraine without aura. Among these 100 patients suffering from migraine without aura, definite migrainous vertigo according to Neuhauser et al criteria was found in 30/100 (30 %). Thus the prevalence of 30 % of definite migrainous vertigo along with migraine without aura, proves beyond doubt, that this form of vertigo is an entity other than aura, and exists in a sizable number of our patients having migraine without aura. Interestingly those having pseudovertigo had exactly the same frequency i.e., 30 %. This frequency of pseudo vertigo may mislead clinicians evaluating dizziness among migraine patients. This clearly emphasizes the importance of careful clinical evaluation of such patients as pseudo vertigo and true vertigo can only be distinguished clinically.

While considering these frequencies one should be careful when comparing our results with other international studies. A study that was carried out in Germany in 2001<sup>8</sup> showed the frequency of MV at 9 % among migraineurs in a headache clinic. Another study was carried out in Croatia in 2005<sup>1</sup> in a similar setting which revealed lifetime prevalence of MV at 23.2 % among migraineurs suffering from dizziness and vertigo. In both these studies the subjects were unselected migraine patients of any type or any duration or even any co morbidities (patients with other otological problems were not excluded). On the other

hand our sample is a highly selected one, considering only migraine without aura which is at least one year in duration and excluding patients having any co morbid conditions especially otological problems

Another study again carried out in Germany<sup>9</sup> was based on general population which showed a lifetime prevalence of MV in general population at 0.98 % and one year prevalence at 0.89 %. However in spite of confirming the high prevalence of MV we cannot compare the frequencies as this study is based on general population while ours is restricted to a highly select group of migraineurs in a speciality clinic.

Our study also showed a marked female preponderance in patients with definite MV which is in conformity with other international studies<sup>1, 8, 9</sup> we had a female to male ratio of 14:1, as opposed to 2:1 in the pseudovertigo group. It seems that some females are particularly susceptible to develop MV; perhaps some kind of hormonal mechanism may explain this phenomenon. It would be interesting to evaluate relationship of vertigo with different phases of menstrual cycle in females in future studies.

We had just 2 patients with definite MV in a group of 18 years and below age subjects, out of a total of 14. It appears that MV affects children and adolescents much less frequently as compared to adults. We would recommend further studies of MV in children and adolescents to confirm our findings.

Regarding clinical characteristics of definite MV our study shows results that corroborate with other international studies with higher frequency of spontaneous rotational vertigo i.e., movement of surroundings and self-motion (83.3 % and 40 % respectively, see table 1).

Thus our study shows that migrainous vertigo is common in patients having migraine without aura. Furthermore, MV is a form of vertigo which needs to be carefully analyzed in headache clinics, as pseudo vertigo is equally common in the same setting. MV mostly affects females, while children and adolescents seem to be least affected. Due to the fact that migrainous vertigo has higher frequencies and its known tendency to dissociate itself from the migraine headache and also to respond to antimigraine treatment,<sup>14</sup> we strongly recommend that it must be considered in the I.H.S classification system for migraine. We would recommend large scale population based studies to find out true prevalence of MV in our population. We would also strongly recommend large multi-center randomized controlled drug trials regard

Patient characteristics	Definite Migrainous vertigo n (%)	Pseudovertigo n (%)	No dizziness n (%)	p values
<b>Gender</b>				
Male	2 (6.8)	10 (33.3)	13 (32.5)	< 0.05
Female	28 (93.3)	20 (66.5)	27 (67.5)	
<b>Age</b>				
≤ 25	9 (30)	11 (36.7)	18 (45)	> 0.05
26 to 39	10 (33.3)	11 (36.7)	14 (35)	
≥ 40	11 (36.7)	8 (26.7)	8 (20)	
<b>Symptoms</b>				
Movement of surroundings	25 (83.3)	None	None	
Movement on the deck of a boat	18 (60)	None	None	N/A
Self-movement	12 (40)	None	None	
Motion intolerance	11 (36.67)	None	None	

**Table 1:** Patient characteristics in different diagnostic categories

ing management of MV.

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#### CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

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