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Association of cervical spondylosis and peripheral vertigo: A prospective study

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Abstract

Background: Cervical spondylosis (CS) is an age-related degenerative condition of the cervical spine. Peripheral vertigo is often observed to co-occur with CS. This study was done to evaluate the association of cervical spondylosis and peripheral vertigo.

Methods: 120 patients of either sex suffering from cervical spondylosis was selected for the study. Meticulous history and clinical examination was done to rule out peripheral vertigo. The mean age of 120 sampled patients was 45.70 years. The results were analysed statistically using Chi square test and inference was drawn.

Results: Of the 120 patients, 27 males (22.5%) and 42 females (35%) had peripheral vertigo. The number of patients with peripheral vertigo was high in the middle aged group (40-59 years) when compared to the elderly. p value was found to be statistically significant (0.00012).

Conclusions: A significant association between cervical spondylosis and peripheral vertigo has been confirmed.

Keywords: Cervical spondylosis, peripheral vertigo, vertebrobasilar insufficiency, X-ray cervical spine

Introduction

Cervical spondylosis (CS) is an age-related degenerative condition of the cervical spine with a prevalence rate of more than 50% among the population aged over 40 years. ^[1] Clinical manifestations may be absent or present with tingling, numbness, weakness, pain in the neck and/or arms, neck stiffness, headaches, vertigo, dizziness, and loss of balance^[1] Radiologically, the findings can range from evidence of osteophytes in the vertebral bodies to the changes in the facet joints, disc narrowing, radiculopathy, and myelopathy. Vertigo is one of the most common complaints encountered in ENT OPD. It is perceived as swaying or rotational movement either of one's own body or of the environment, or both. ^[1, 2] Vertigo may be central or peripheral due to neurological disruptions or acoustic apparatus pathology, and with the potential involvement of a wide range of pathophysiologic mechanisms including neuro-auditory-vestibular impacts of systemic conditions like diabetes, hypertension, dyslipidemia etc ^[2]. Peripheral vertigo is often observed to co-occur with CS.

This study was done to evaluate the association of cervical spondylosis and peripheral vertigo.

Materials and Methods

Study Design and Setting

A prospective study was conducted at Subam Clinic, Coimbatore, Tamil Nadu, India, between May 31, 2019 and April 1, 2020.

Study Population

Sample size: 120.

Inclusion Criteria

The following criteria were included in the study.

- Physiologically active males and females between 18 and 70 years old.

- Patients complaining of neck pain and other symptoms related to cervical spondylosis.
- Adults having radiological evidence of cervical spondylosis.

Exclusion Criteria

The following criteria were excluded from the study.

- People of age below 18 years old and above 70 years old.
- Patients suffering from central vertigo were excluded from the study.
- Patients suffering from cervical myelopathy, central vertigo and other central nervous system disorders were excluded from the study.

Data Collection

The study protocol was approved by the local ethical committee. Those patients who were willing to participate in the study were included after obtaining informed written consent. Meticulous history was taken pertaining to CS and peripheral vertigo. The patients were subjected to clinical examination. Patients who tested positive for head thrust test were deemed to suffer from peripheral vertigo. Radiologically, the evidence of cervical spondylosis was confirmed for all patients.

Results

Among the examined 139 patients, only 120 patients met our inclusion criteria.

Among these 120 patients, 54% (65 patients) were males and the 46% (55 patients) were females. [Table 1].

Table 1: Gender

Number of patients	Male	Female
120	65 (54%)	55 (46 %)

The number of patients below the age of 30 were 10, between 30 to 39 were 23, between 40-49 were 36, between 50 to 59 were 35 and between 60-69 were 16. [Table 2]

The mean age of 120 sampled patients was 45.70 years.

Table 2: Distribution of cervical spondylosis patients among different age groups

Age Group	Number of Patients
< 30	10 (8.3%)
30-39	23 (19.2%)
40-49	36 (30%)
50-59	35 (29.2%)
60-69	16 (13.3%)

Of the 120 patients, 27 males (22.5%) and 42 females(35%) had peripheral vertigo [TABLE 3]. The incidence of vertigo was the highest in the age group 30-39 years (22) when compared to the other age groups. [Table 4] The Chi Square test was performed to calculate the p value. It was found to be statistically significant (0.00012).

Table 3: Presence of peripheral vertigo in various age groups.

Gender	YES (n = 69)	NO (n = 51)
Male	27 (22.5%)	38 (31.7%)
Female	42 (35%)	13 (10.8%)

Table 4: Distribution of peripheral vertigo among different age groups

Age Groups	YES (n=69)	NO (n=51)
< 30	5 (4.2%)	5 (4.2%)
30-39	22 (18.3%)	1 (0.8%)
40-49	19 (15.8%)	17 (14.2%)
50-59	15 (12.5%)	20 (16.7%)
60-69	8 (6.66%)	8 (6.66%)

Discussion

The term “cervical vertigo” was first described in 1955 by Ryan and Cope. Cervicogenic vertigo (CGV) remains poorly understood because of the lack of specific diagnostic tests for vertigo. Dizziness due to cervicogenic causes was theorized to be a result of abnormal afferent input to vestibular nuclei from damaged receptors in the cervical spine [10].

Schenk *et al* attributed three mechanisms for cervicogenic dizziness: irritation of the cervical sympathetic nervous system, vertebral artery compression due to mechanical stress or stenosis, and functional disorders in C0 to C3 involving proprioceptors [11].

During clinical evaluation, it was necessary to rule out central causes and psychosomatic disorders before a disorder of the vestibular nuclei is to be looked for. In our study we have included patients only with peripheral vertigo, after exclusion of the other causes.

The research for literature to associate cervical spondylosis and peripheral vertigo was carried out using online databases like PUBMED, ResearchGate, MEDLINE and Google Scholar. We did not find enough studies to support our cause.

In a study by Yang.T *et al.*, it was found that patients with a prior CS were more susceptible to peripheral vertigo. The people between the age group of 45 to 64 years were found to have the higher odds of peripheral vertigo. The co-occurrence of CS and vertigo was not observed in the elderly population aged over 64 years. The probable cause could be the difference in their lifestyle with lesser work load, physical and emotional stress when compared to the patients of the middle age (45-64 years) [1].

In our study, we found similar results. The number of patients with peripheral vertigo was high in the middle aged group (40-59 years) when compared to the elderly. [Table 4]

Limitations of the Study

The limitation of the study is the sample size. The study should be conducted in a larger scale to support the association.

Conclusion

This study provides a significant association between cervical spondylosis and peripheral vertigo. The results call for greater awareness of the possible CGV among patients aged between 40 and 59 .Obtaining subjective history and utilizing appropriate diagnostic tests can be beneficial in assessing peripheral vertigo in patients with cervical spondylosis. Further clinical and epidemiological studies are required to find out the associations in different regions and ethnicities.

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