Original Article

Assessment Of Depression, Anxiety, Stress And Cognitive Functions In Patients Of Vertigo; A Case-Control Study

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Abstract

Background: Earlier studies reported that there is a coexistence of vestibular disorders and psychological distress.

Objectives: The present study was undertaken to observe the levels of depression, anxiety and stress, and cognition in vertigo patients and to compare them with healthy controls.

Materials and methods: The present study was a case-control study. A total of 80 male and female vertigo patients were part of the study after obtaining written informed consent. 80 Age and gender-matched healthy controls were also recruited in the study. The following criteria were used in recruiting the cases. Depression, anxiety, and stress were assessed using the standard scale DASS 21. Cognitive functions were assessed using spatial and verbal memory tests.

Results: There were significantly higher levels of depression scores in the cases when compared with controls (P<0.0001). There were significantly higher levels of anxiety scores in the cases when compared with controls (P<0.0001). There were significantly higher levels of stress scores in the cases when compared with controls (P<0.0001). There were significantly lower levels of spatial memory scores in the cases when compared with controls (P<0.0001). There were significantly lower levels of verbal memory scores in the cases when compared with controls (P<0.0001).

Conclusion: The present study results explain that there were higher levels of depression, anxiety, and stress in patients with vertigo. At the same time, their cognitive functions were adversely affected due to this vestibular disorder. It is the need of time to consider these psychological and cognitive parameters also while diagnosing and management of vertigo.

Keywords: Vertigo, depression, Anxiety, Stress, Cases

INTRODUCTION:

Vertigo is a vestibular disorder that has a prevalence of about 204 percent.[1] Excessive stimulation of semicircular canals leads to vertigo. Further, systemic diseases like diabetes, hypertension, etc cause degeneration of neurons and may lead to the development of vertigo.[2.3] The role of psychological factors and their influence on the management outcome is a topic of interest in recent years. It was reported that negative psychological emotions like depression, anxiety, and stress influence vertigo.[4-6] Earlier studies reported that there is a coexistence of vestibular disorders and psychological distress.[7-9] It was explained that management of the psychological disorders and vertigo speed up the outcomes of the patients.[10] There is a close relationship between cognitive functions and the vestibular system. The vestibular system is well connected with the structures of the brain that are associated with cognition. Normal vestibular system functioning is essential for normal cognitive functions as the vestibular system is closely connected with the hippocampus, degeneration of the vestibular system leads to the degeneration of the hippocampus and affects memory. The present study was undertaken to observe the levels of depression, anxiety, stress, and cognition in vertigo patients and compare them with healthy controls.

Aim and objective:

The present study was undertaken to observe the levels of depression, anxiety , stress, and cognition in vertigo patients and compare them with healthy controls.

MATERIALS AND METHODS:

Study design: The present study was a case-control study.

Study participants: A total of 30 male and female vertigo patients were part of the study after obtaining written informed consent. Age and gender-matched healthy controls were also recruited in the study. The following criteria were used in recruiting the cases.

Inclusion criteria:

Both male and female vertigo patients with minimum complications and willing to participate in the study and within the age group of 30-60 years of age were included in the study.

Exclusion criteria:

Patients with severe complications and not willing to participate in the study were excluded from the study.

Assessment of depression, anxiety, and stress:

Depression, anxiety, and stress were assessed using the standard scale DASS 21.[11]

Assessment of cognition:

Cognitive functions were assessed using spatial and verbal memory tests. This is a simple recall test where ten images and 10 words were projected for a minute and the participant is given a minute gap. After the gap, he will be asked to recall the images and words respectively.[12]

Ethical considerations:

The institutional human ethical committee approved the study protocol. The study was conducted following the guidelines of ICMR.

Statistical analysis:

Data was analyzed using SPSS 20.0 version. Student t-test was used to observe the significance of the difference between the groups. A probability value of less than 0.05 was considered significant.

RESULTS:

Results were presented in table no 1. There were significantly higher levels of depression scores in the cases when compared with controls (P<0.0001). There were significantly higher levels of anxiety scores in the cases when compared with controls (P<0.0001). There were significantly higher levels of stress scores in the cases when compared with controls (P<0.0001). There were significantly lower levels of spatial memory scores in the cases when compared with controls (P<0.0001). There were significantly lower levels of verbal memory scores in the cases when compared with controls (P<0.0001).

Table 1: Depression, anxiety and stress and cognitive functions among cases and controls

Parameter	Cases (n=80)	Controls (n=80)	P value
Depression	24±0.89	16±0.34	<0.0001***
Anxiety	19±0.67	10±0.22	<0.0001***
Stress	33±1.45	18±0.67	<0.0001***
Spatial memory	3±0.11	6±0.22	<0.0001***
Verbal memory	4±0.11	8±0.11	<0.0001***

Data were presented as mean and SEM. ***P value <0.0001 is significant.

DISCUSSION:

The present study was undertaken to observe the levels of depression, anxiety, stress, and cognition in vertigo patients and compare them with healthy controls. There were significantly higher levels of depression scores in the cases when compared with controls (P<0.0001). There were significantly higher levels of anxiety scores in the cases when compared with controls (P<0.0001). There were significantly higher levels of stress scores in the cases when compared with controls (P<0.0001). There were significantly lower levels of spatial memory scores in the cases when compared with controls (P<0.0001). There were significantly lower levels of verbal memory scores in the cases when compared with controls (P<0.0001).

Vertigo is one of the common clinical syndromes with a prevalence rate of five percent in the adult population.[13] The most common cause of vertigo is peripheral vestibular disorders. Interestingly, it was explained that many patients with vertigo were reported to have excess depression and anxiety.[14] The major problem with this coexistence of disorders is that they lead to a positive feedback cycle and still worsen the condition and affect the outcomes.[15] Earlier studies reported

the association between anxiety and depression and vertigo.[16,17] The present study results are in accordance with earlier studies.

Impairments in cognitive functions are most common in patients with dizziness. The most common domains affected by vestibular damage include visuospatial ability, memory, attention, and executive function.[18-21] It was reported that cognitive functions like counting backward is not possible for vertigo patients.[22] In the present study, the spatial and verbal memory scores were severely impaired in the cases when compared with the control group.

CONCLUSION:

The present study results explain that there were higher levels of depression, anxiety, and stress in patients with vertigo. At the same time, their cognitive functions were adversely affected due to this vestibular disorder. It is the need of time to consider these psychological and cognitive parameters also while diagnosing and management of vertigo.

Conflicts of interest: None declared

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