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Assessment of Depression, Anxiety, Stress and Cognition in hypertension

Salla Surya Prakasa Rao,[1] Sweta Ramani,[2] Manem Raveena[3], Manem Nikitha[3]

[1]*Assistant Professor, Department of General Medicine, Andhra Medical College, Vishakapatnam, Andhra Pradesh, India*
[2]*Post Graduate, CTVS Department, Frontier Life Line Hospital, Chennai, Tamil Nadu, India*
[3]*Intern, Andhra Medical college, Vishakapatnam, Andhra Pradesh, India*

ABSTRACT

Objective: The present study was designed to observe the depression, anxiety, stress and cognition levels in hypertensive patients. Materials and Methods: 30 Patients with pre hypertension to stage-1 hypertension, and 30 healthy, age matched controls, including both males and females, were included in the study after obtaining written and informed consent.DASS-42 was used to assess depression, anxiety and stress and MMSE and spatial and verbal memory test was used to assess cognition. Results: Significant increase in depression, anxiety and stress and impaired cognitive functions were observed in hypertensive patients. Conclusion: We have observed significant decline in the cognitive functions and increase stress, depression and anxiety scores in the hypertensive's. We urge clinicians to assess the negative emotions and cognitive functions and also consider management of these functions as a part of the treatment.

Key words: Depression, Anxiety, Stress, Cognition, Hypertension

Introduction

According to new classification, high normal blood pressure (BP) [systolic BP (SBP) 130–139 mmHg or diastolic BP (DBP) 80–89 mmHg] patients fall into the category of prehypertensive [1] and Stage 1 hypertension patients (SBP 140–159 mmHg or DBP 90–99 mmHg). [2,3] The relationship between hypertension and cognitive function is controversial.[4] Most of the longitudinal studies demonstrated that higher blood pressure causes decline in cognitive functions.[4] Poorly controlled hypertension leads to vascular dementia.[5] One third of the hypertensive patients were depressed and earlier studies suggested interventions for hypertensive's to manage depression.[6] In contrary, other study reported that, hypertension is associated with anxiety but not depression.[7] It was reported that, stress can lead to repeated blood pressure elevations, which eventually may lead to hypertension.[8] The present study was designed to observe the depression, anxiety, stress and cognition levels in hypertensive patients.

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*Correspondence
Dr. Salla Surya Prakasa Rao,
Assistant Professor,
Department of General Medicine, Andhra Medical College, Vishakapatnam, Andhra Pradesh, India.

Materials and methods

Patients and controls
30 Patients with pre hypertension to stage-1 hypertension, and 30 healthy, age matched controls, including both males and females, were included in the study after obtaining written and informed consent. The following criteria were followed while selecting the patients as cases.

Inclusion and exclusion criteria
Inclusion criteria
Willing male and female patients initially diagnosed with pre hypertension to stage-1 hypertension were included in the study.
Exclusion criteria
   1. Patients with any other severe complications.
   2. Patients following relaxation methods
   3. Unwilling patients

After recording the demographic information, all the healthy subjects (controls) and patients (cases) were familiarized with the cognition tests and recorded their cognitive functions.
Setting: The study was conducted at Department of General Medicine, Andhra Medical College, Vishakapatnam, Andhra Pradesh. All the values were recorded in the morning for the convenience of the participants.

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Tests for assessment of cognitive functions
Verbal and spatial memory test: It was a standard test to assess spatial and verbal memory.[9]
The Mini Mental State Examination (MMSE): It is a tool that can be used to systematically and thoroughly assess mental status. It is an 11-question measure that tests five areas of cognitive function: orientation, registration, attention and calculation, recall, and language. The maximum score is 30. A score of 23 or lower is indicative of cognitive impairment. The MMSE takes only 5-10 minutes to administer and is therefore practical to use repeatedly and routinely.[10]
Assessment of depression, anxiety and stress
Depression Anxiety and Stress Scale (DASS) [11] was used to assess depression, anxiety and stress.

Statistical analysis: Data was analyzed by using SPSS 20.0 by using student "t" test. P value less than 0.05 was considered as significant.

Results
Table 1 presents demographic profile of the cases and controls. No significant difference was observed between cases and controls. Table 2 presents cognitive functions of cases and controls. Significant impaired MMSE scores, spatial and verbal memory scores were observed in cases. Table-3 presents depression, anxiety and stress levels in cases and controls. We have observed significantly higher levels of depression, anxiety and stress levels in hypertensive participants.

Table 1: Demographic profile of the cases and controls

Parameter	Cases (n=30)	Controls (n=30)
Age*	47.82±5.44	49.71±4.53
Gender (Male: female)	20:10	19:11
Height*	152.21 ± 25.36	154.76 ± 23.72
Weight*	71±16.44	68±17.69

*Values are expressed in Mean ± SD. There is no statistically significant difference in between groups.

Table 2: Cognitive functions in cases and controls

Parameter	Cases (n=30)	Controls (n=30)	P value
MMSE	19.0±4.77	24.00±3.84	<0.0001###
Spatial Memory	2.66±1.58	6±3.11	<0.0001###
Verbal Memory	2.81±1.98	6.7±2.64	<0.0001###

Data was expressed as Mean ± SD. (#P<0.05, ##P<0.01,###

Table no: 3 Depression, anxiety and stress levels in cases and controls

Parameter	Cases (n=30)	Controls (n=30)	P value
Depression	22±5.31	14±3.99	<0.0001***
Anxiety	18.76±1.33	9.43±2.52	<0.0001***
Stress	27.11±2.66	17.34±3.48	<0.0001***

Data was presented as Mean±SD. (*P<0.05, **P<0.01,***P<0.001)

Discussion
Earlier studies reported that depression is common in patients with uncontrolled hypertension screening for depression in hypertensive patients is a simple and cost-effective tool. [12] Depression, anxiety and stress are commonly experienced by hypertensive patients and many studies highlited the need of assessment and management of negative emotions in hypertension patients.[13] Our study further supports earlier studies as we have observed significant increase in the depression, anxiety and stress levels in patients with hypertension. Hypertension causes vascular changes in the brain which causes ischemia of brain areas associated with cognition and leads to vascular cognition impairment.[14-19] Our study further supports earlier studies as we have observed significant decline in the cognitive functions in hypertensive patients.

Limitations
The major limitation was less sample size and we have not assessed biomarkers of stress. Generalization of the results may not be possible as the study conducted at one centre only.

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Conclusion

We have observed significant decline in the cognitive functions and increase stress, depression and anxiety scores in the hypertensive's. We urge clinicians to assess the negative emotions and cognitive functions and also consider management of these functions as a part of the treatment.

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