Research Paper Medical Science

A Comparative Study of Anxiety Score In Subjects; Hyper-Reactor and Normo-Reactor to Cold Pressor Test

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ABSTRACT

Anxiety is a normal reaction to stressful situations. According to Freud's conceptualization of anxiety in 1894, there are two different aspects to measure the anxiety. One is psychological tests which are used with statements based on symptoms experienced during anxious states and another is physiological tests that use physiological parameters such as changes in heart rate, blood pressure, respiratory rate, cardiac output, forearm blood flow, pulse volume and rate etc. This study is designed to compare the psychological test with physiological measures of anxiety and to establish a firmer relation between the two types of tests. The subjects comprised of both male and female 120 young health medical students of age group 18 to 21 years, selected randomly. There is statistically significant high anxiety score is found in hyper-reactor compare to normo-reactor subjects in cold pressor test, so hyper- reactors are more anxious compare to normo- reactor subjects. Reactivity to cold presser test can be used as predictors to assess the anxiety level in a subject.

KEYWORDS Cold Pressor Test , Hyper-reactor, Normo-reactor

Introduction

Anxiety is a normal reaction to stressful situations, in some cases; it becomes excessive and can cause sufferers to dread everyday situations. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of worry. They may also have physical symptoms such as sweating, trembling, dizziness, a rapid heart beat or high blood pressure. Stress to perform is ever increasing both mentally and physically in our modern era of throat cut competitions. The present era is an era of anxiety and stress. With the encroachment of knowledge, the need to learn more and retain more in limited life span has put on lots of significance. This limitation of time, learn to more and perform to more have given rise to more anxiety.

According to Freud's conceptualization of anxiety in 1894, there are two different aspects to measure the anxiety. One is psychological tests which are used with statements based on symptoms experienced during anxious states and another is physiological tests that use physiological parameters such as changes in heart rate, blood pressure, respiratory rate, cardiac output, forearm blood flow, pulse volume and rate etc. The psychological tests measure self-estimated subjective anxiety scores while physiological changes indicate the person's reactivity to stressful conditions. The stress response involves activation of regulatory centers in the central nervous system that stimulate both the hypothalamic-pituitary-adrenal axis and autonomic nervous system. The hypothalamic-pituitary-adrenal axis is one of the major systems involved in the stress response. It facilitates adaptations to changes in the internal or external conditions of the body. Temperature and other environmental stressors are known to affect heart rate and blood pressure. For example, sudden and increasingly painful cold stress causes massive discharge of the sympathetic nervous system and release of catecholamine. This sympathetic discharge triggers responses in the cardiovascular system that includes arteriolar constriction, increased heart rate, and increased cardiac contractility. These responses combine to increase blood pressure. This is known as the pressor response, and testing a subject with cold stress in this fashion is known as the cold pressor test. The cold pressor test has been used clinically as a stress test to assess left ventricular function . The test is also used to evaluate cardiac autonomic function and as an experimental pain stimulus.

Objective of Study : To compare anxiety score in hyper-reactor and normo-reactor young subjects in cold pressor test.

Material and Method- The present work was undertaken in department of physiology, N.S.C.B. Medical College, Jabalpur, M.P. The subjects comprised of both male and female 120 young health medical students of age group 18 to 21 years, selected randomly, studying in first M.B.B.S. classes.

Cold pressor test : Cold presser status of all the cases was determined by doing the cold pressor test, described by Hines and Brown (1933) in the following manner. Every subject was allowed to rest in a calm, quiet and comfortable room in supine position, for a period of 30 minutes. Prior to the rest period, nature of the test was explained to the subjects, so as to allay any undue apprehension in the students. Then by Auscultatory method, blood pressure was recorded by mercury sphygmomanometer every 10 minutes until last two consecutive readings were identical. With the subject still in supine position cuff of the sphygmomanometer tied in right arm, the left hand was immersed in ice cold water (at 4 deg C) up to just above wrist level. The hand was kept immersed in ice cold water for 60 seconds i.e. one minute. Immediately after 60 seconds, blood pressure reading was taken, and hand was withdrawn from ice cold water. Another blood pressure reading was taken 60 seconds after the removal of hand from ice cold water.

Based upon the recordings of blood pressure. of subjects, they were differentiated into two groups using the criteria for Hyperreactors and Normoreactors to cold presser test according to Hines and Brown (1933 & 1936).

Hyperreactors : Those subjects in whom systolic blood pressure increased by 20 or more mm of Hg and/or diastolic blood pressure increased by 15 or more mm of Hg.

Normoreactors :Those subjects in whom rise in systolic blood pressure was less than 20 mm of Hg and/or rise in diastolic

blood pressure was less than 15 mm of Hg.

Anxiety Test : For discriminating anxiety-prone, anxious and hyperanxious students from the normal students in the study group, students were given Sinha's Comprehensive Anxiety Test (SCAT) booklets on a separate day. Nature of test was explained to them. There was no time limit for anxiety test. The test booklet contained 90 questions, each of which was to be answered in Yes or No only. The students were explained that no answer was completely right or wrong. They were requested to be honest in their approach, to answer the question in yes or no only; and to answer all the questions.

At the end test booklets cum answer sheets were collected from students, and then evaluated. To each question, for which the response was 'yes' in an answer, a score of (1) was allotted, whereas to each such question for which the response was 'No' in answer, a score of (0) was given. Then total score was calculated. Based upon their scores, various levels of anxiety of students were determined as follows

MALES	FEMALES	ANXIETY LEVEL/ STATUS
Up to	Up to	
12	13	Extra low anxiety
15	16	Low anxiety
23	25	Normal
29	28	High anxiety
30 & above	29 & above	Extra high anxiety

Observation:

Table- 1

Showing mean age of the students

Cases	Number	Mean Age (in years)	F value	P value
Total	120	18.90±0.95	±1.94	>.05
Male	62	19.01±1.00		
Female	58	18.78±0.88		

Table- 2

Showing anxiety score in whole sample, male and female groups

Cases	Number	Mean Anxiety	t value	P value
Total	120	23.08±14.09	1.34	>.05
Male	62	24.76±15.34		
Female	58	21.29±12.53		

Table- 3

Showing cold pressor status of whole study group, male and female groups

Cases	NO.	Normoreactor		Hyperreactor	
		Number	%	Number	%
Total	120	86	71.7%	34	28.3%
Male	62	39	45.3%	23	67.6%
Female	58	47	54.7%	11	32.4%

Table- 4

Comparison of anxiety score in subjects- hyper-reactor and normo-reactor to cold pressor test

Cold Pressor Status	No.	Mean Anxiety Score	t value	P value
Normo-reactor	86	16.43±8.86	11.63	<.001
Hyper-reactor	34	39.91±10.37		

Result:

Amongst total subject, 71.70% of the subjects were normo-reactors to cold stress, whereas 28.3% were hyper-reactors. 45.3%of normo-reactors were males while females constituted 54.7% of this group. Among Hyper-reactors 67.6% were males while females were only 32.4%. When tested by Pearson Chi-square test, using null-hypothesis, that reactor status to cold stress is independent of sex difference, the hypothesis was rejected [Chi-square 4.85 and P value 0.027]. Thus males tend to be hyper-reactors in higher proportion as compared to females.

On the other hand, mean anxiety score of hyper-reactors [39.91+10.37] is significantly higher than that of normo-reactors [16.43+8.86] at 0.001 level of probability.

Discussion:

This study is designed to compare the psychological test with physiological measures of anxiety and to establish a firmer relation between the two types of tests. There is statistically significant high anxiety score is found hyper-reactor compare to normo-reactor subject in cold pressor test. Some psychologists conducted studies relating anxiety with academic performance with special reference to the stimulus of drive and taking into account its vitalizing utility in their theory, they concluded that high anxiety groups are undoubtedly superior in academic performance to the low anxiety groups. Anxiety score measured by Sinha's Comprehensive Anxiety Test has shown good correlation with a rise in blood pressure in response to cold presser test in the subjects. Both systolic and diastolic rise in blood pressure show parallel changes with anxiety score i.e. a higher increase in blood pressure is seen in subjects with greater anxiety and a lesser change is seen in subjects with lower anxiety.

Conclusion:

Mean anxiety score of hyper-reactors [39.91+10.37] was significantly higher than that of normo-reactors [16.43+8.86] at 0.001 level of probability so hyper- reactors are more anxious compare to normo- reactor subject. Reactivity to cold pressor test can be used as predictors to assess the anxiety level in a subject.

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