Artículo de Investigación

HEART AND BRAIN. THE CASE OF DEFENSIVE HOSTILITY

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ABSTRACT

Nowadays we know that the classic risk factors (obesity, smoking, sedentary lifestyle, among others) are not enough to explain the risk of cardiovascular disease (CVD). Other psychosocial factors, such as Type A or D behavior pattern, stress, anger, hostility and, more recently, defensive hostility, seem to play a prominent role in the occurrence of this type of disorders. Specifically, it has been proven that people who habitually present hostile, negative and distrustful attitudes towards those around them, together with a defensive tendency, that is: with a need for social approval and having to show their kindest face, present greater heart rate (HR) and, greater systolic and diastolic blood pressure (SBP, DBP) levels 1,2,3, When this form of behavior becomes too frequent, intense and/or long lasting, the risk of damage to the arteries and cardiovascular functioning in general increases exponentially, and may cause relevant disorders such as angina pectoris or myocardial infarction. In different studies, the relationship between psychosocial factors and the formation of atheromatous plaque has been confirmed, this being the basic lesion that occurs in CVD 4,5. In fact, as some authors proposed 6, psychosocial research should focus on the systematic response to stressful situations and associated negative attitudes and emotions.

INTRODUCTION

The main objective is to investigate the impact of defensive hostility as psychosocial factor that could be predict the cardiovascular risk. We examined the impact of a stressful situation on cardiovascular responses, using a continuous psychophysiological assessment approach. Concretely, heart rate (HR), systolic blood pressure (SBP) and diastolic blood pressure (DBP) were recorded during three experimental phases (adaptation, task and recovery).Cook-Medley Hostility Scale and the Social Desirability Questionnaire were used to form four groups (high hostility and high defensiveness, high hostility and low defensiveness, low hostility and high defensiveness, and low hostility and low defensiveness). We expected the high hostility and high defensiveness group to show higher levels of cardiovascular parameters compared to the other groups. The results confirmed this hypothesis.

MATERIALS AND METHODS

To achieve this objective, HR, SBP and DBP were recorded during three experimental phases: habituation (without stimulation), stress task (exam) and recovery (without stimulation), in order to analyze the evolution of the cardiovascular response and check if defensive hostility influences cardiovascular function. As a stress situation, in the task phase, a real test was used. The sample was made up of 220 university students, mostly women (192 compared to 28 men), with an age range between 18 and 30 years. All of them participated voluntarily and signed the corresponding informed consent according to the Declaration of Helsinki. From the scores obtained in the Composite Hostility Scale of the Cook-Medley hostility inventory and the Marlowe-Crowne Social Desirability Scale, we formed four groups: high hostility-high defensiveness (HD, n = 42), high hostility-low defensiveness (HH, n = 72), low hostility-high defensiveness (Def, n = 70), and low hostility-low defensiveness (LH, n = 36). To measure the cardiovascular responses, in a continuous and non-invasive way, the Biopac MP150 recording system was used together with the NIBP100A amplifier. Data analysis were carried out with the statistical program SPSS (v24).

RESULTS

After collecting the data, descriptive analyzes were carried out, as well as analysis of variance (ANOVA) and means comparisons (T-Tests) to observe the values of each group and verify the existence of differences between them. As expected, the HD group presented the highest values in heart rate and blood pressures in each of the three phases of the experiment.

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In summary, the following figure (Fig 1) show the results of the most representative parameters (SBP and DBP).

![Figure 1](image-url)

**Figure 1** Average values of SBP and DBP (mmHg) in the four groups throughout the three phases.

As we can be observed, the HD group presents the highest values in the registered cardiovascular parameters, also during the three experimental phases. From the ANOVA (groups) x 3 (phases) appeared statistically significant differences in the group variable in HR (F3, 216 = 4.574, p = .004), in SBP (F3, 216 = 6.065, p = .001) and in DBP (F3, 216 = 5.605, p = .001). To delimit between which groups such differences were found, the Scheffé post hoc test was applied, observing that the groups involved were the HD and BH, the two extreme groups, both in HR (dif = 8.82, p = .014), and in SBP (dif = 11.11, p = .001) and in DBP (dif = 7.64, p = .003).

**CONCLUSION**

In summary, the results continue to indicate that hostile defensive persons present a greater risk of CVD, since the values referred to HR, SBP and DBP, both in rest situations and in stressful situations, are significantly higher. The theoretical explanation of the functioning of hostile defensive persons consists in the existence of a conflict. On the one hand, their attitude is hostile, negative and distrustful toward others, with a tendency to show aggressive responses; but, at the same time, and on the other hand, they need to receive social approval, with which they have to repress those negative attitudes and feelings in order to show those characteristics or behaviors that are socially acceptable. This continuous internal conflict manifests itself in their organism, in this case through functioning of their cardiovascular system. These results could contribute to some extent to the better knowledge of the aetiology of cardiovascular diseases.

**References**


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