



Online Brazilian Journal of Nursing

E-ISSN: 1676-4285

objn@enf.uff.br

Universidade Federal Fluminense
Brasil

de Rezende Bessa Guerra, Thaís; Lemos Diniz Venâncio, Isabella Christina; da Costa
Vieira, Soraya; Peclat Flores, Paula Vanessa; Dantas Cavalcanti, Ana Carla; Tinoco
Mesquita, Evandro

Serotonin biomarkers and brain-derived neurotrophic factors in heart failure: a prospective
cohort

Online Brazilian Journal of Nursing, vol. 13, 2014, pp. 395-398

Universidade Federal Fluminense

Rio de Janeiro, Brasil

Available in: <http://www.redalyc.org/articulo.oa?id=361441681011>

- How to cite
- Complete issue
- More information about this article
- Journal's homepage in redalyc.org

redalyc.org

Scientific Information System

Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal

Non-profit academic project, developed under the open access initiative



OBJN
Online Brazilian Journal of Nursing

ENGLISH

Federal Fluminense University

AURORA DE AFONSO COSTA
NURSING SCHOOL



Preview Notes



Serotonin biomarkers and brain-derived neurotrophic factors in heart failure: a prospective cohort

Thaís de Rezende Bessa Guerra¹, Isabella Christina Lemos Diniz Venâncio¹, Soraya da Costa Vieira², Paula Vanessa Peclat Flores¹, Ana Carla Dantas Cavalcanti¹, Evandro Tinoco Mesquita¹

1 Fluminense Federal University

2 Laranjeiras National Institute of Cardiology

ABSTRACT

Aim: To analyze the prognostic of serotonin biomarkers and brain-derived neurotrophic factors (BDNF) on depression in patients with systolic heart failure. **Method:** An observational, multicenter, prospective cohort study in three specialized centers, from April 2014 to November 2016. **Study protocol:** multidisciplinary medical consultation, depression inventory, quality of life questionnaire and blood test to measure serotonin and BDNF, with analysis via high performance liquid chromatography and ELISA, respectively. In order to study the association of these markers with the analytical methods used, a statistical evaluation will be carried out using the chi-square test and the Pearson correlation coefficient. For the analysis of mortality and hospitalization, logistic regression and analysis of mortality risk will be used. The statistical significance is 5%. **Expected results:** biological markers are more effective than conventional tests (questionnaires) when used to identify the degree of depression.

Descriptors: Serotonin; Brain-Derived Neurotrophic Factor; Heart Failure; Depression.

INTRODUCTION

Heart failure (HF) is a disease that is highly prevalent worldwide⁽¹⁾. One study has demonstrated that depressed subjects have lower levels of the Brain-Derived Neurotrophic Factor (BDNF) than a control group. After antidepressant treatment, serum levels rose due to the increase of serotonin which regulates the synthesis of BDNF⁽²⁾.

Nevertheless, the author is now aware of any studies that have been developed in multicenter cohorts aimed at correlating the prognostic impact of these markers on depression in systolic HF.

To assess the symptoms of depression, the Beck Depression Inventory (BDI) is currently used to discriminate between healthy individuals and the depressed or anxious⁽¹⁾.

Since this disorder is a predictor of the quality of life⁽¹⁾, we suggest that a longitudinal follow-up may indicate the likelihood of the occurrence of depression in HF patients. This study's hypothesis is that serotonin and BDNF, when evaluated prospectively, may be, in heart failure, markers of depression or risk factors.

AIM

To correlate the prognostic of serotonin, biomarkers and BDNF with depression in patients with systolic HF.

METHOD

Study design and participants:

Multicenter observational study, prospective cohort⁽³⁾ type, involving 12 months of follow up in the form of quarterly checks in three outpatient specialist clinics: the Antônio Pedro

University-Hospital (center 1, Niterói, RJ), the Laranjeiras National Institute of Cardiology (center 2, Rio de Janeiro, RJ) and the Porto Alegre General Hospital (center 3, Porto Alegre, RS). The research will be carried out from April 2014 to January 2016.

Participants:

Adult patients diagnosed with systolic HF (Boston criteria) whose communication skills have been preserved will be invited to participate in the study. Patients who use medication with selective serotonin reuptake inhibitors, who are illiterate, who have limited movement and/or have medical records of cognitive impairment, will be excluded.

Definition of Variables:

- Dependent variable: depression
- Independent variable: sociodemographic and clinical levels of serotonin and BDNF.

Sample calculation:

The sample was calculated based on moderate and/or severe BDI scores (BDI>18) of 51% in a previous study (1). Considering the population served in centers 1 (120 patients), 2 (150 patients) and 3 (700 patients), with a 95% confidence level and a margin of error of 5%, we will include 276 patients in this study. Assuming a 20% discontinuity in the patients being monitored, the estimated sample will be 332 individuals. The calculation was done using WinPepi v.11.43 software.

Study protocol:

In the three centers, after training, the multidisciplinary team will work with standardized

questionnaires. Patients will be monitored for 12 months. Blood samples for determining the markers shall be taken by a single lab (also in charge of transport and storage). The researchers will have no access to the test results in order to minimize errors that might interfere with the study. Investigator 1 will conduct the query and investigator 2 will be in charge of storing the examined material.

- Stage 1: Training of research protocols in the centers. Selection of patients from the database, applying the protocol to the ones considered eligible. In the first query procedure: history, quality of life questionnaire, questionnaire on depression, anthropometry, physical capacity and blood test.
- Stage 2: Medical visit (3rd to 9th month). The group will be monitored in terms of general health guidelines.
- Stage 3: Medical visit (6th to 12th months). The patients will participate in the consultation with the protocol described in Stage 1.

Data Analysis

The organization of data will be carried out using the Microsoft Excel 2007 program, and the analysis will be done using the SPSS (Statistical Package for the Social Sciences) v.17.0 program. Categorical variables are expressed by the distribution of absolute and relative n (%) frequencies and percentages. Continuous variables were analyzed in terms of the calculation of mean, median, standard deviation, coefficient of variation (CV) and percentiles. In terms of inferential analysis, the Student "T" and the Mann-Whitney tests will be used, and the Cronbach's alpha will be used to determine data reliability. To determine the association between serotonin and BDNF and the biopsychosocial variables, the chi-square test will be used. For categorical

variables, comparisons between groups will use the Pearson correlation coefficient. A *p* bivariate value <0.05 will be considered statistically significant for all analyzes⁽³⁾.

EXPECTED RESULTS

Biological markers are more effective than conventional tests (questionnaires) for identifying the degree of depression.

REFERENCES

1. Altay H, Zorlu A, Kocum HT, Demircan S, Yilmaz N, Yilmaz MB. Relação entre Paratormônio e Depressão na insuficiência cardíaca. *Arq. Bras. Cardiol.* (Online) [internet]. 2012 Oct [cited 2014 May 15]; 99(4): 915-23. Available from: <http://www.scielo.br/pdf/abc/v99n4/aop08512.pdf>. doi: <http://dx.doi.org/10.1590/S0066-782X2012005000088>.
2. Bhuiyan S, Tagashira H, Fukunaga K. Current Perspective Crucial Interactions Between Selective Serotonin Uptake Inhibitors and Sigma-1 Receptor in Heart Failure. *J Pharmacol Sci.* (Online) [internet]. 2013 March [cited 2014 May 21]; 121(3):177-84. Available from: https://www.jstage.jst.go.jp/article/jphs/121/3/121_12R13CP/_pdf. doi: <http://dx.doi.org/10.1254/jphs.12R13CP>.
3. Lima DVM, Santos SS. Curso rápido para autores: metadados para a pesquisa de enfermagem – update 2011. *Online Braz J Nurs* [Internet]. 2011 October [Cited 2014 May 20]; 10 (2). Available from: <http://www.objnursing.uff.br/index.php/nursing/article/view/3633>. doi: <http://dx.doi.org/10.5935/1676-4285.20113633>.

INFORMATION ON THE PROJECT: PhD project of Cardiovascular Sciences, a Fluminense Federal University program approved by the Ethics and Research Committee of the University Hospital Antônio Pedro, CAAE-25093513.0.0000.5243/29-04-14.

All authors participated in the phases of this publication in one or more of the following steps, in According to the recommendations of the International Committee of Medical Journal Editors (ICMJE, 2013): (a) substantial involvement in the planning or preparation of the manuscript or in the collection, analysis or interpretation of data; (b) preparation of the manuscript or conducting critical revision of intellectual content; (c) approval of the versión submitted of this manuscript. All authors declare for the appropriate purposes that the responsibilities related to all aspects of the manuscript submitted to OBJN are yours. They ensure that issues related to the accuracy or integrity of any part of the article were properly investigated and resolved. Therefore, they exempt the OBJN of any

participation whatsoever in any imbroglis concerning the content under consideration. All authors declare that they have no conflict of interest of financial or personal nature concerning this manuscript which may influence the writing and/or interpretation of the findings. This statement has been digitally signed by all authors as recommended by the ICMJE, whose model is available in http://www.objnursing.uff.br/normas/DUDE_eng_13-06-2013.pdf

Received: 07/27/2014

Revised: 08/04/2014

Approved: 08/04/2014