POSTER 11

Neurocognitive functioning in acute coronary syndrome: ventricular ejection fractions and kynurenic acid

Gabriela Graça[1,2], Ana Sousa[2], Cláudia Ribeiro[2,3], Virgínia M.F. Gonçalves[2], Joana Barbosa[2], Sandra Leal[2,4], Bruno Peixoto[1,4,5]*

[1]*SINCLab- FPCEUP, Universidade do Porto, 4050-123 Porto, Portugal.*

[2]*TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU, CRL, 4585-116 Gandra, Portugal.*

[3]*Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR), Universidade do Porto, 4050-123 Porto, Portugal.*

[4]*Center for Health Technology and Services Research (CINTESIS), Associate Laboratory RISE-Health Research Network, University of Porto, 4200-450 Porto, Portugal.*

[5]*Department of Social and Behavior Sciences, University Institute of Health Sciences, CESPU, 4585-116 Gandra, Portugal.*

*✉ *bruno.peixoto@iucs.cespu.pt*

Doi: https://doi.org/10.51126/revsalus.v4iSup.278

Resumo

Introduction: The factors that underlie the association between neurocognitive dysfunction in acute coronary syndrome (ACS) are extensive and far from being understood. The study of the degradation of tryptophan through the kynurenine pathway (KY) in this context offers a wide avenue for research [1]. **Objetives:** To determine the relations between sociodemographic, cardiovascular risk factors and clinical and biochemical variables, including the KY metabolites, with neurocognitive functioning after ACS. Moderation effects regarding those relations will be determined. **Material and Methods:** The Addenbrooke's Cognitive Examination-III (ACE-III) was administered to 24 participants with history of ACS, selected at the cardiology outpatient consult. Univariate analysis was performed through Spearman correlations and Mann-Whitney U test. The moderation hypothesis was tested through Haye's PROCESS, version 3 for SPSS. **Results:** The ventricular ejection fraction (VEF) correlated positively with the results on ACE-III (ρ=.608; p= .01). This correlation is moderated by the concentration of kynurenic acid (KA) in urine (interaction coefficient .04; standard error .003; t=-2.38, p=.025). Lower levels of KA reduce this correlation. No other variable showed significant correlation with ACE-III or any moderation effect on the relation with ejection fraction. **Conclusions:** VEF has been recognized as an important factor in neurocognitive functioning due to the underlying mechanisms related to cerebral hypoperfusion [2]. However, our study signals that lower levels of KA diminish the positive correlation between VEF and neurocognitive performance. Since KA production is reduced in inflammatory states [3], these results suggest that VEF effect on cognition may differ according to systemic inflammation.

Keywords: coronary; cognition; tryptophan metabolites; kynurenine; neuropsychology.

References:

[1] Peixoto B. Acute coronary syndrome, brain and neurocognitve functioning. What's inbetween? 2016.

[2] Cannon JA, McMurray JJ, Quinn TJ. 'Hearts and minds': association, causation and implication of cognitive impairment in heart failure. Alzheimers Res Ther 7(1):22, 2015.

[3] Sousa A, Ribeiro C, Gonçalves VM, Barbosa J, Peixoto B, Andrade A, et al. Development and validation of a liquid chromatography method using UV/fluorescence detection for the quantitative determination of metabolites of the kynurenine pathway in human urine: Application to patients with heart failure. J Pharm Biomed Anal 198:113997, 2021.