EXPLORING FRAILTY-RELATED BIOMARKERS AND POTENTIAL INFLUENCE OF ENVIRONMENTAL FACTORS

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Background: Recent evidence advocates that healthy ageing may be possible, with morbidity compressed to later years. One area of concern is the burden of environmentally induced disease in susceptible populations. Older adults are a well-recognized susceptible population due to the decline of immune defences and the burden of multiple chronic diseases. As a susceptible population, the burden of environmentally induced disease and lifestyle factors is an increasing concern. Frailty is an age-related syndrome expected to increase over the next decades given the observed demographic shift. This syndrome has been identified to be the most common condition leading to disability, institutionalization and death in the older adults and the risk factors associated with its development are yet to be clarified. The main aim of the present study is to investigate a relation between frailty status, biomarkers and environmental exposures.

Methods: A group of older adults (≥65 years old) was engaged in this study. Frailty status was assessed via Fried's frailty model. DNA damage and oxidative DNA damage were measured through comet assay, and genomic instability assessed by micronucleus test. Mercury levels in blood were also evaluated. Key exposures were assessed via lifetime exposure questionnaire.

Results: The study population was classified as 47.5% robust, 49.2% pre-frail and 3.3% frail. A significant higher prevalence of second-hand smokers was found in the pre-frail group when compared to robust. Also, a higher prevalence of robust individuals was found among those consuming home-produced vegetables. No differences were found between frailty phenotypes regarding the exposure and effect biomarkers. However, some effect was found regarding exposure-related factors.

Short discussion/conclusions: The preliminary data obtained encourage further studies on this matter: exploring the role of key exposures and its impact on health. It is important to further understand if the way we live(d) or worked can impact the way we age. Acknowledgments: Armanda Gomes and Solange Costa are supported by FCT under the grants SFRH/BD/121802/2016 and SFRH/BPD/100948/2014, respectively. Vanessa Valdiglesias is supported by Xunta de Galicia postdoctoral fellowship (ref.ED481B 2016/190-0).