IS MICRONUCLEUS FREQUENCY IN PERIPHERAL LYMPHOCYTES AND BUCCAL CELLS RELATED TO FRAILTY SYNDROME IN OLDER ADULTS?

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Average age of populations around the world is rapidly increasing. This aging situation is leading to an inversion of the population pyramids and to relevant increases in healthcare expenditure. In this new context, frailty has emerged as a more reliable way to estimate biological age. Frailty is a condition of vulnerability involving an increased risk of poor outcomes in older adults, including disability and mortality. Genomic instability has been proposed to be a primary cause of the aging phenotype since most age-related diseases and aging signs are associated with it. Therefore, implementation of clinical data with genomic instability biomarkers would have the potential of anticipating recognition of frail individuals and improving frailty outcomes. The objective of the present work was to assess the possible relationship between micronucleus (MN) frequency – a biomarker of genomic instability – evaluated both in peripheral blood lymphocytes and in exfoliated buccal cells, and frailty status in a population of older adults aged 65 and over. Results obtained showed that frail individuals had significantly higher frequencies of MN in lymphocytes and of binucleated buccal cells, as well as lower frequencies of pyknotic and condensed chromatin buccal cells, than pre-frail and non-frail subjects. When nutritional status and cognitive status of the individuals were considered, similar results were obtained, revealing increases in the rates of MN in lymphocytes and of binucleated buccal cells, together with decreases in the frequencies of pyknotic buccal cells, in individuals at risk of malnutrition/malnourished or with cognitive impairment compared to those with normal nutrition or without cognitive

impairment. Additional research is necessary to further understand the connection between genomic instability and frailty syndrome in the elderly.

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