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FRAILTY IN THE ELDERLY: BIOMARKERS FOR EARLY DETECTION

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The world population is experiencing extraordinary demographic changes, mainly due to declines in birth rates and increases in longevity, which are causing an alteration of the population pyramids. Consequent increases in age-dependent pathologies are related to important socioeconomic and sanitary implications.

The concept of ‘frailty’ has recently emerged as a new and more accurate measure of biological age. Frailty, as a condition opposed to full health or ‘fitness’, is a multidimensional syndrome of loss of reserves (cognition, energy, physical ability, health), with behavioural and physical connotations, which gives rise to vulnerability, understood as disability and/or dependence, generally imminent. Common signs and symptoms are fatigue, weight loss, muscle weakness, and progressive decline in psychological and physiological functions.

At present, frailty assessment is mostly based on phenotypic features, namely unintentional weight loss, self-reported exhaustion, low physical activity, slow walking speed and grip strength (Fried et al., 2001), or in a cumulative index of health deficits (Mitnitski et al., 2001). Nevertheless, as the biological basis of frailty is multifactorial, involving deregulation through many physiological systems, increasing evidence support the possible existence of other biomarkers for frailty, mainly at cellular and molecular levels. These biomarkers might be potentially employed for early identifying frail elder patients.

Determining and validating these biomarkers would provide a significant step forward in geriatric patients care, since it would allow to anticipate frailty state and detect vulnerable patients before clinical manifestations become evident. They may be even useful in preventing and reverting frailty, since this syndrome was found to be reversible in a certain degree. Thus, together with the improvement of quality of life in the elderly, identifying frailty biomarkers would also let promote personalized healthcare, introduce suitable dependency programs, and reduce socioeconomic and sanitary costs.

References

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