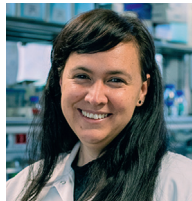


EDITOR'S PAGE



Paradigm Shift

Cardiovascular Health in the Elderly—Beware of the Brain



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In the classic novel *The Picture of Dorian Gray*, an unscrupulous and decadent young man desires to maintain youth, but a hidden portrait reveals his true age and the ugliness of his soul. While many of us desire to stave the natural process of aging, the story reminds us that it is integral to health throughout our lives. This Editors' Page is the last editorial of a series of 3 discussing the paradigm shift needed to address cardiovascular health at every stage in a person's lifespan.¹⁻³ Here, we focus on the vulnerable population of the elderly. Age is the strongest risk factor for cardiovascular disease. The prevalence of any cardiovascular disease is >75% in people aged >60 years, and reaches nearly 90% in people aged >80 years.⁴ Given that age has such a profound impact on developing cardiovascular disease, is there anything we can do to prevent cardiovascular problems once someone is >65 years of age? The short answer is yes. However, as discussed in the previous editorials, the sooner we control all modifiable cardiovascular risk factors, the better. Ideal cardiovascular health lowers cardiovascular disease incidence in the elderly.⁴ For example, a 2-year multidomain lifestyle intervention on cardiovascular risk in those aged 60 to 77 years resulted in a >10% drop in cardiovascular events.⁵ However, the tight control of modifiable risk factors is often challenging, and people tend to falter in their adherence to lifestyle interventions. Interestingly, we have observed that our patients often change their attitude when told that not following a healthy lifestyle will also impact their

cognitive function, as well as their cardiovascular health. This is a true change in paradigm.

Age is also the strongest risk factor for dementia. According to the Alzheimer's Association, 1 in 10 individuals aged >65 years has the most common form of dementia: Alzheimer's disease.⁶ This number triples in those aged >85 years.⁶ Interestingly, cardiovascular disease and dementia share many other risk factors besides age.⁷ The 2020 report of the *Lancet* Commission for Dementia Prevention, Intervention and Care listed less education, hypertension, hearing impairment, smoking, obesity, depression, physical inactivity, diabetes, low social contact, alcohol consumption, traumatic brain injury, and air pollution as the 12 modifiable risk factors accounting for 40% of all dementia cases.⁸ Indeed, the interventional FINGER (Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability) trial focused on controlling modifiable lifestyle factors (diet, exercise, cognitive training, vascular risk monitoring, and social stimulation) in individuals aged >60 years showed a decreased risk of cognitive decline.⁹ These exciting results encouraged the launch of The World-Wide FINGERS, a global initiative of preventative clinical trials from >25 countries aimed at reducing dementia by implementing multidomain intervention strategies.¹⁰

Cardiovascular disease and dementia have long asymptomatic phases. Thus, one of the fundamental questions is: at what stage of life does cardiovascular

disease start affecting the brain's health? The PESA (Progression of Early Subclinical Atherosclerosis) study will be invaluable in shedding light on this query. In apparently healthy PESA participants at the age of 50, there is already an association between the presence of cardiovascular risk factors and subclinical carotid atherosclerosis with a reduced metabolism in cerebral areas involved in the development of dementias, especially of the Alzheimer's type.¹¹ Brain metabolism is then already affected during midlife when the individual is exposed to cardiovascular risk factors, probably decreasing the brain's resilience to the appearance of neurodegenerative disorders in later life. The PESA study has been recently extended to run until 2029 and will include a number of brain assessments, such as cognitive testing, highly comprehensive brain magnetic resonance imaging, and the determination of amyloid and other brain injury biomarkers.¹² This study is in a unique position

to understand whether and how cardiovascular disease and dementia (co)-develop from asymptomatic to symptomatic stages.

Individuals are aware that cardiovascular health is integral in preventing a heart attack or a stroke, but we need to reinforce the reality that following a healthy lifestyle is also beneficial for maintaining optimal cognitive function. As the protagonist in *The Picture of Dorian Gray* learned too late, the question is not about dying sooner or later, but about aging at every stage (youth, middle age, and elderly) with quality of life.

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